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ABSTRACT

Utilizing a minimum of technical terminology, this eight-chapter monograph introduces beginning psychology students to the basic concepts of Piaget's theory of mental development and to its application by parents and teachers. As an aid to learning, each of the concepts discussed is illustrated by black-and-white drawings which can be reproduced as transparencies. Chapter I provides information for the instructor on the use of the book as well as an introductory note for the student. It goes on to provide information about Jean Piaget and summarize his fundamental principles of assimilation, accommodation, and equilibrium. Chapters II through V describe the four cognitive stages and the associated sub-stages in Piaget's mental development model; these four stages are the sensorimotor, preoperational, concrete operational, and formal operational stages. Chapter VI then presents four self-evaluation exercises that can be used independently by the students to test their learning. Chapter VII presents general rules for applying Piaget's theory and outlines the behavioral characteristics that adults can expect of children at each developmental level. Finally, Chapter VIII provides an extensive bibliography. (JP)

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A CONCEPTUAL-PICTORIAL APPROACH TO THE UNDERSTANDING OF PIAGET'S THEORY OF MENTAL DEVELOPMENT

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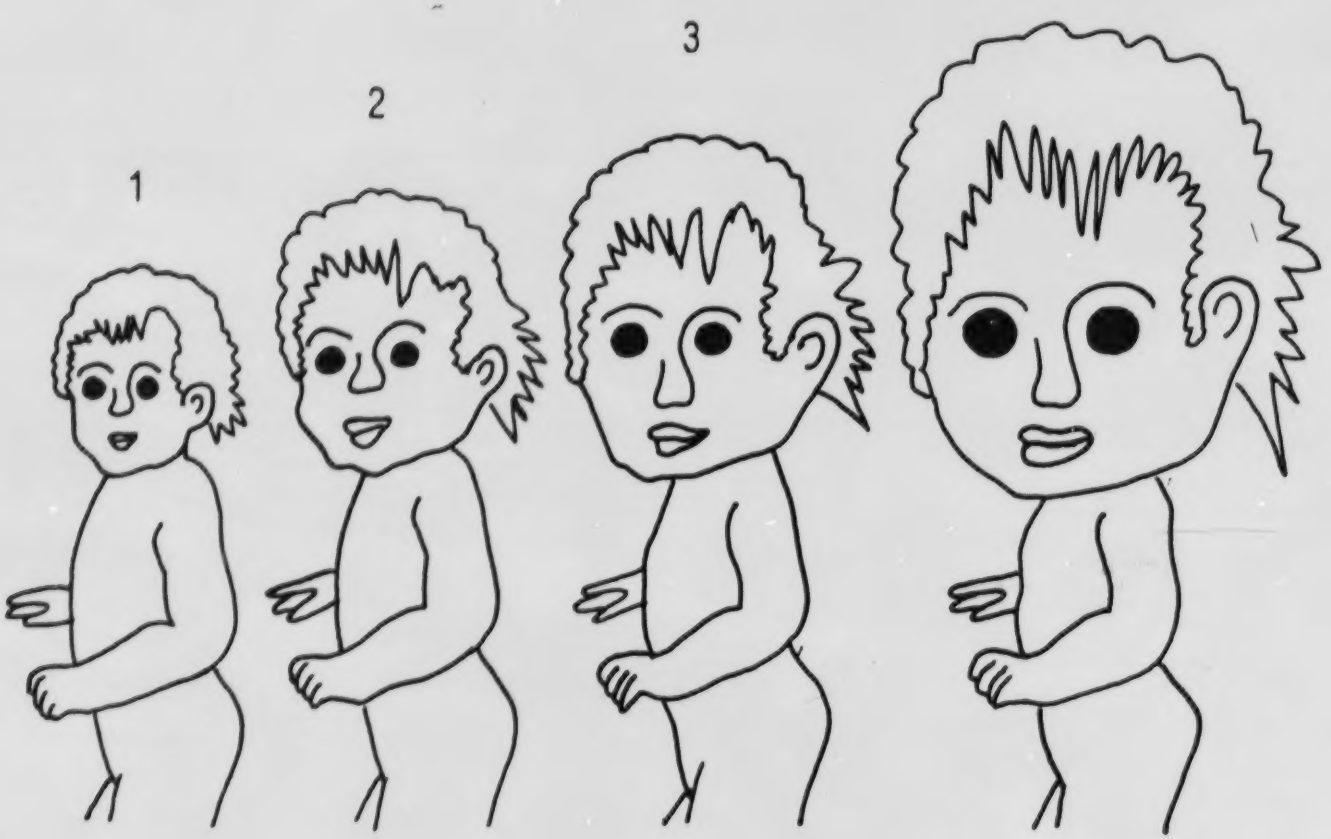

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PREFACE TO STUDENT

Why Study Piaget's Theory Of Mental Development

OBJECTIVE OF BOOK

1. To help students understand how they develop and developed.

2. To help students understand the development of their peers and parents, so interactionary tensions among them are less.

3. To help students understand the concept of intelligence as adaptation, so if and when they discover their "IQ" they are not traumatized by it.

4. To help students understand their "Piagetian" parents' expression, "I went through that stage when I was his/her age".

5. To help students build a foundation of Piagetian knowledge they can use in their daily lives.

6. To help students understand Piaget's basic theory of mental development without the usual felt confusion most beginning students experience when studying developmental psychology.

DEDICATION

The author wishes to dedicate this thin but important book to all those children who are so often times misunderstood by adults.

CHAPTER I

INTRODUCTION

A Note To The Teacher Who Uses This Book

The author wrote this book with the explicit intention of helping the beginning student of developmental psychology to understand, in a clear and concise way, the basic concepts involved in Jean Piaget's general stage theory of mental development.

This book is meant for the young as well as the old. It is the authors firm belief that if a person can read he/she can understand this book.

The book attempts to instruct the student in an area of developmental psychology, which is usually known as a difficult one by most students, by using a touch of humor to ease its understanding.

The approach used throughout this book is what the author calls the CONCEPTUAL PICTURE APPROACH, or teaching through pictures. A Chinese wiseman once remarked that a picture is worth 1000 words--how true it is!

Most of Piaget's technical terminology has been excluded from the contents of this book because, according to the author's experience, Piaget's special technical language usually confuses the beginning student; and isn't required unless the student wants to pursue Piagetian psychology in greater depth.

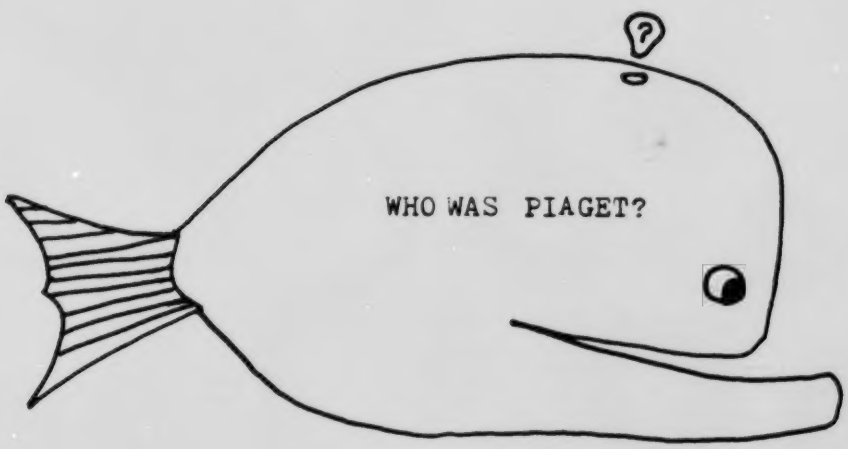
The student who is interested in studying Piaget further should consult the annotated book and article bibliography near the end of this book.

An instructive point of this book is that the illustrations can be directly reproduced as transparencies, and used as visual aids while covering the contents of the book in the class room.

A Note For The Student

The author hopes this book will clearly tell you something about the thoughts of a great researcher in human development in general, and in "cognitive" (mental) development in specific. The author further hopes this book will enlighten you about how you functioned as a child, so you can identify with the mental developmental struggle children around you are experiencing.

Furthermore, the author hopes this introductory book will encourage you to further your readings on Piaget and other researchers in cognitive human development.



Who Was Piaget?

Jean Piaget is a Swiss researcher in the area of developmental psychology. His work has focused primarily on the mental development of CHILDREN.

What did Piaget look like?

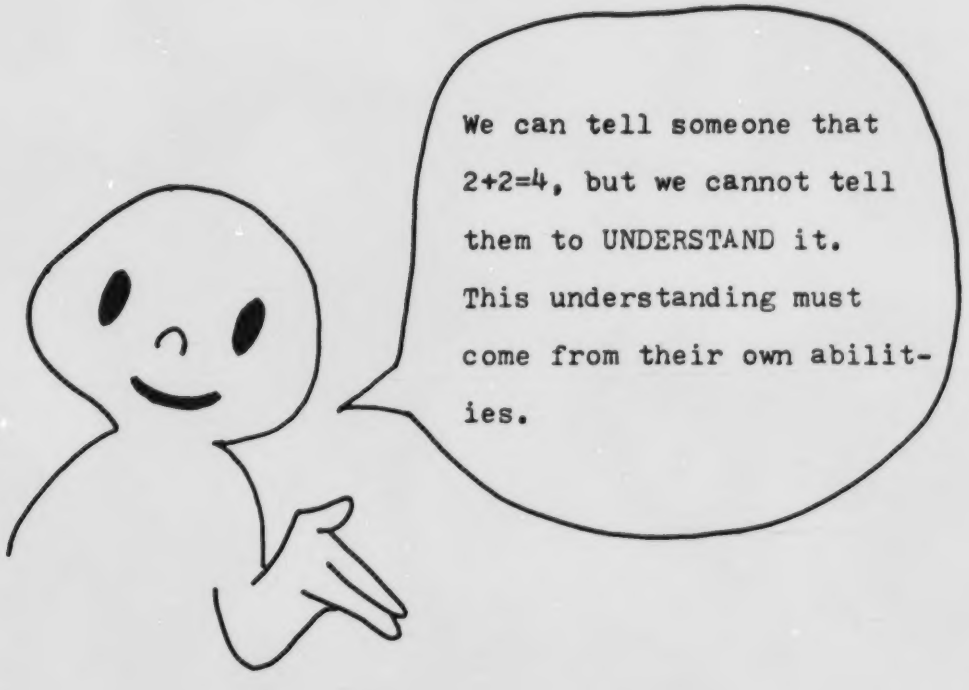
Piaget had the kind of eyes that shone with wisdom and genius. Unlike most of us he started his research career at the age of ten when he published his first scientific paper. From the age of ten to sixteen, he learned so much about biology he was offered his first job as a curator of a famous European museum but had to refuse the offer because he was still in high school!

Although Piaget died in 1980 at the age of 85, his work continues through the efforts of his associates and students at the famous Geneva Institute of Child Research located in Geneva, Switzerland.

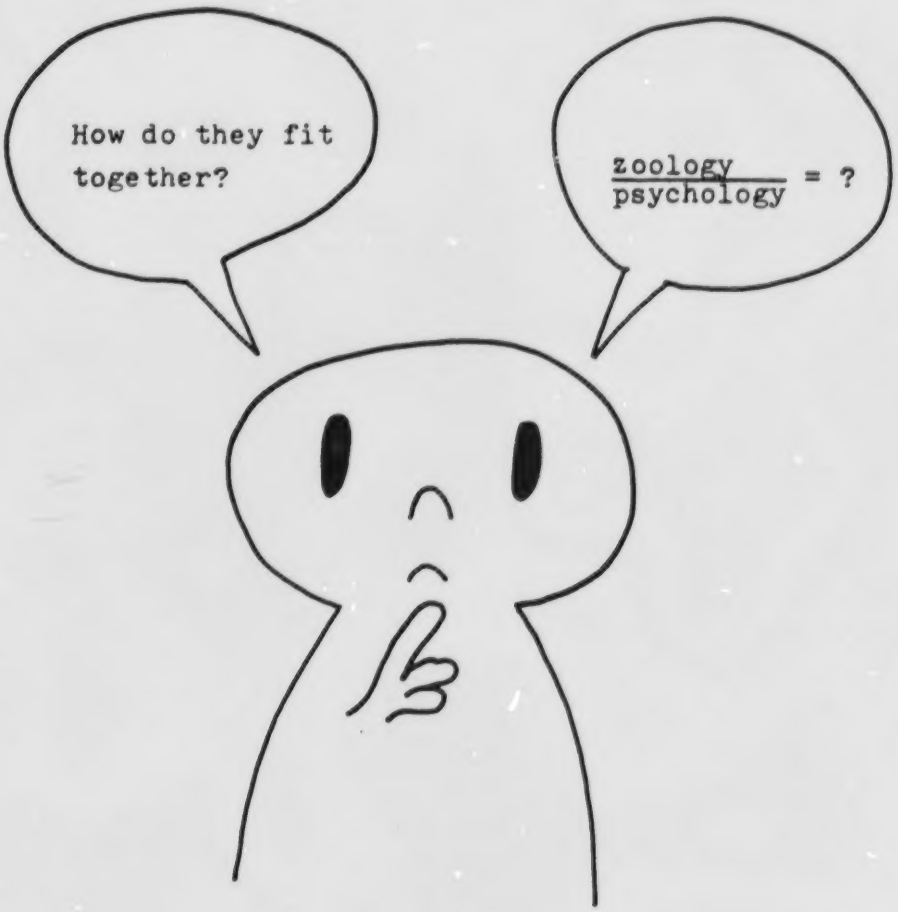
Further, although Jean Piaget was noted by some as a "cognitive psychologist", he considered himself a "genetic epistemologist", or a hybrid of three disciplines: philosophy, genetics, and psychology.

Briefly, the genetic epistemologist studies the very nature of knowledge: what it is, and how human genetics effect HOW and WHY we know.

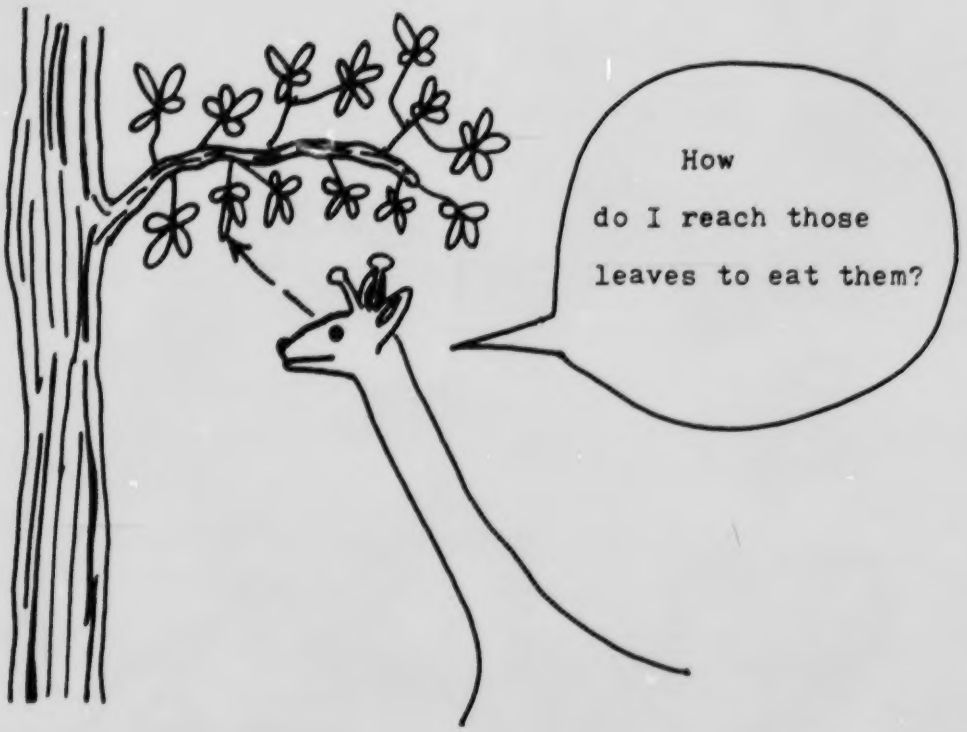
Jean Piaget attempts to explain through his research on the mental development of children, how children come to understand, and the relationships of childrens abilities to what they know.


We can tell someone that 2+2=4, but we cannot tell them to UNDERSTAND it. This understanding must come from their own abilities.

Although Piaget began his professional career in zoology (the study of animal life) he had a greater desire to find a logical link between zoology and psychology.

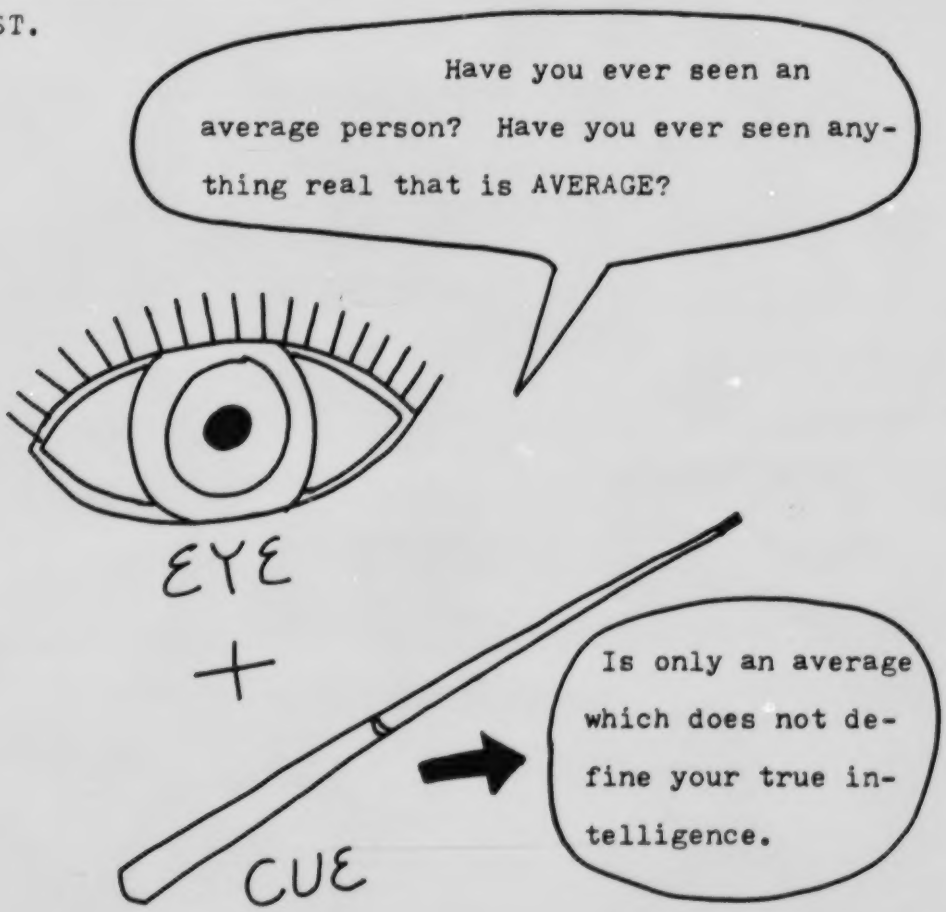


Piaget was unsatisfied with just the study of animals and wanted to know HOW and WHY animals understood, including humans.



So he embarked onto the work of two French men by the names of Binet (pronounced Bin-nae) and Simon (pronounced See-moan) who operated an experimental laboratory to study the mental development of French children. Simon and Binet's sole purpose was to devise a test for the express purpose of identifying retarded children. From the beginning, as is still true today, the fundamental purpose of the tests was to predict school sucess.

This was the beginning of what is known today as the IQ TEST.

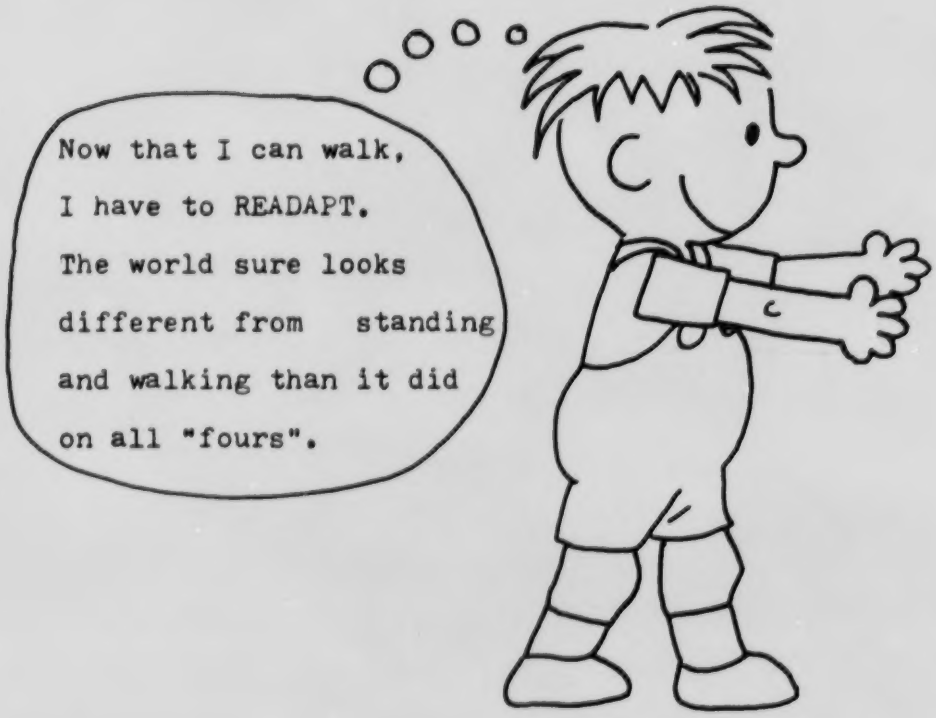

Have you ever seen an average person? Have you ever seen anything real that is AVERAGE?
EYE
+
CUE
Is only an average which does not define your true intelligence.

AND PIAGET

During his work with Simon and Binet, Piaget became concerned with the QUALITY of a child's intelligence rather than the QUANTITY of a child's intelligence. To Piaget, intelligence is more than a SCORE on a test, which to him means the amount of thinking skill, not the kind of thinking. Piaget is concerned with the way in which a child ARRIVES at an answer to a test question, not whether he answers the question correctly.

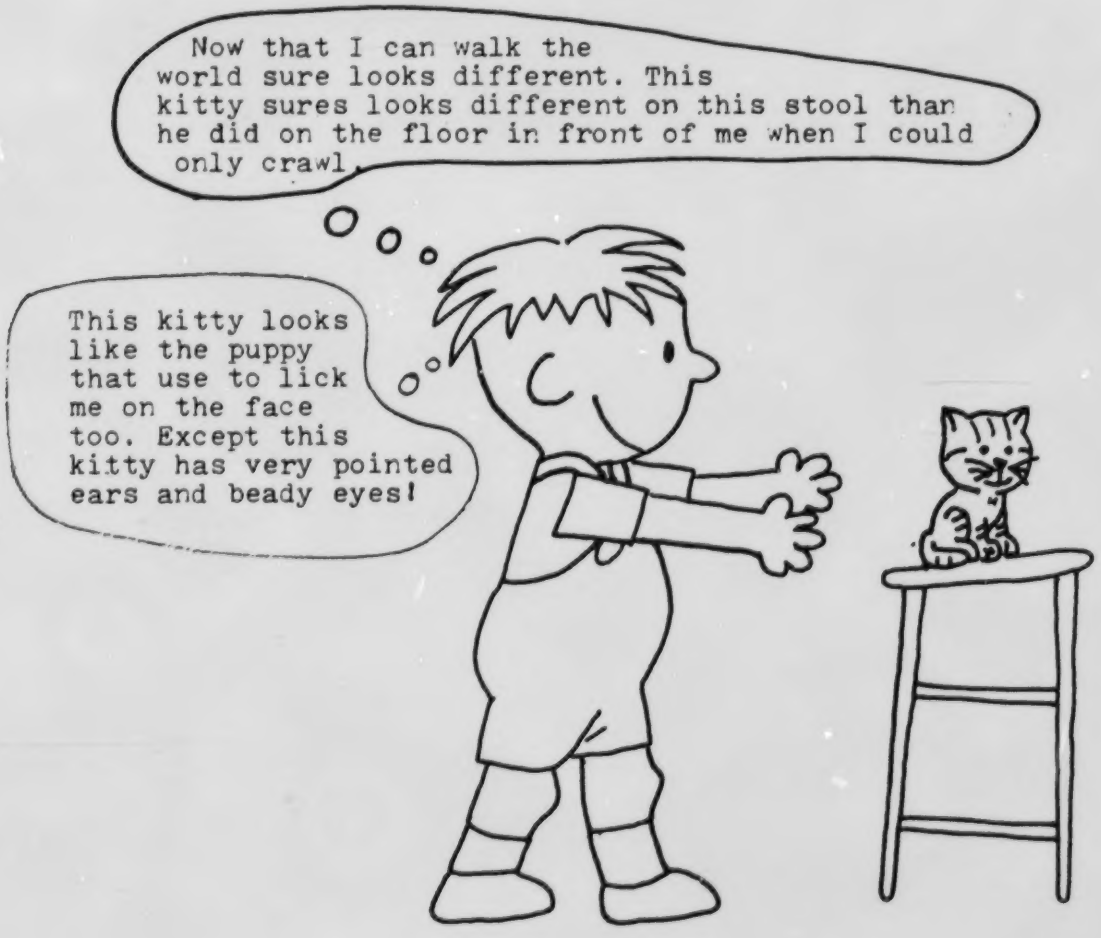
Piaget's concept of QUANTITY and QUALITY is the same as:

Since Piaget does not believe intelligence can be defined or properly understood through IQ tests, or what he called, "the amount of thinking", he believes intelligence can be defined and understood by the "quality" of a person's thinking, or "how well a person ADAPTS to his environment.



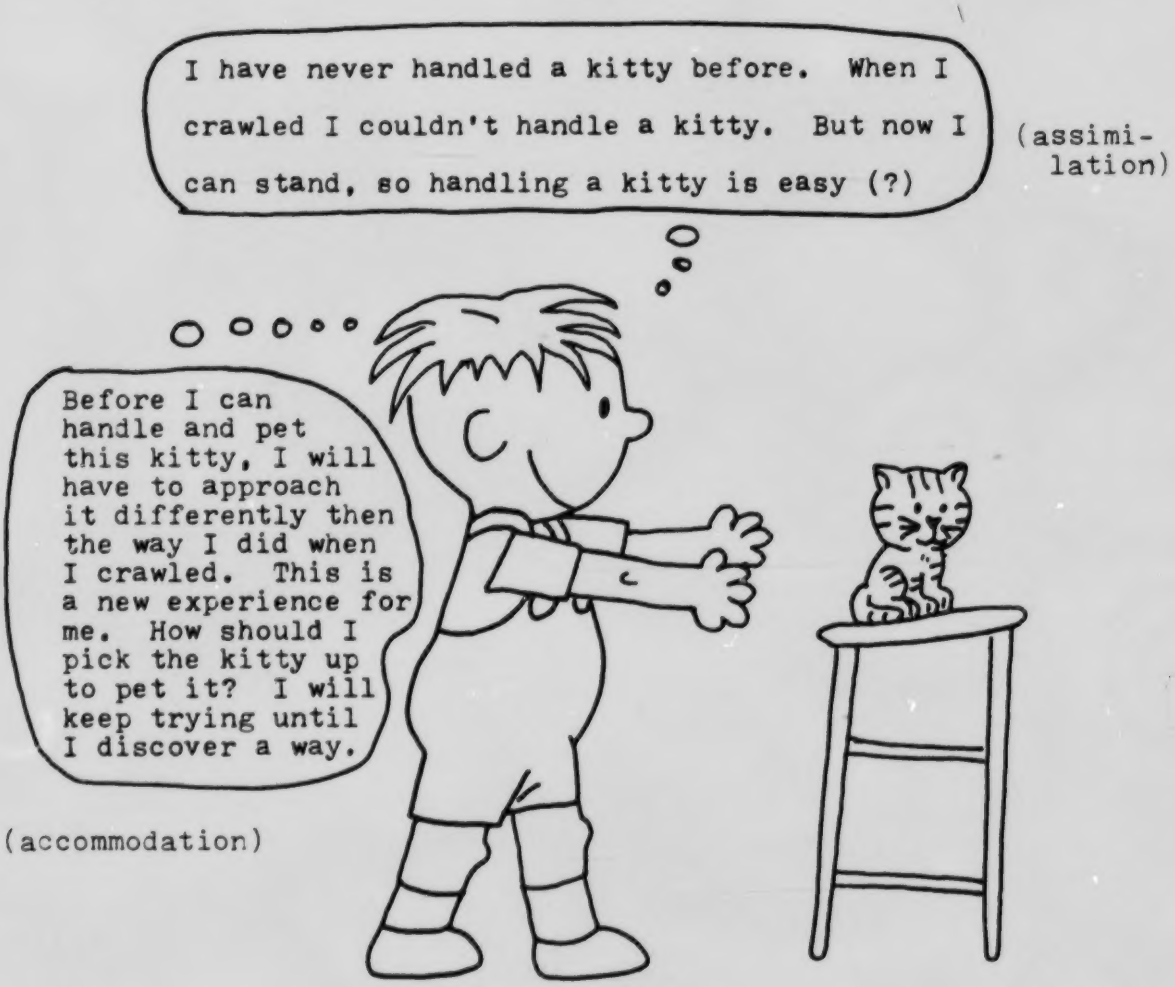
Piaget defines ADAPTATION as interdependent mental processes which he calls ASSIMILATION, EQUILIBRATION, and ACCOMMODATION.

ASSIMILATION is defined by Piaget as the mental process of adding new pieces of knowledge or information to the knowledge or information a person has already gained from his past experience interacting with the environment.


Now that I can walk the world sure looks different. This kitty sures looks different on this stool than he did on the floor in front of me when I could only crawl.
This kitty looks like the puppy that use to lick me on the face too. Except this kitty has very pointed ears and beady eyes!

ACCOMMODATION has been defined by Piaget as the CHANGE a person makes within his own mind, so he can receive the piece of new knowledge or information and make it part of the knowledge or information he has already gained from past experience.

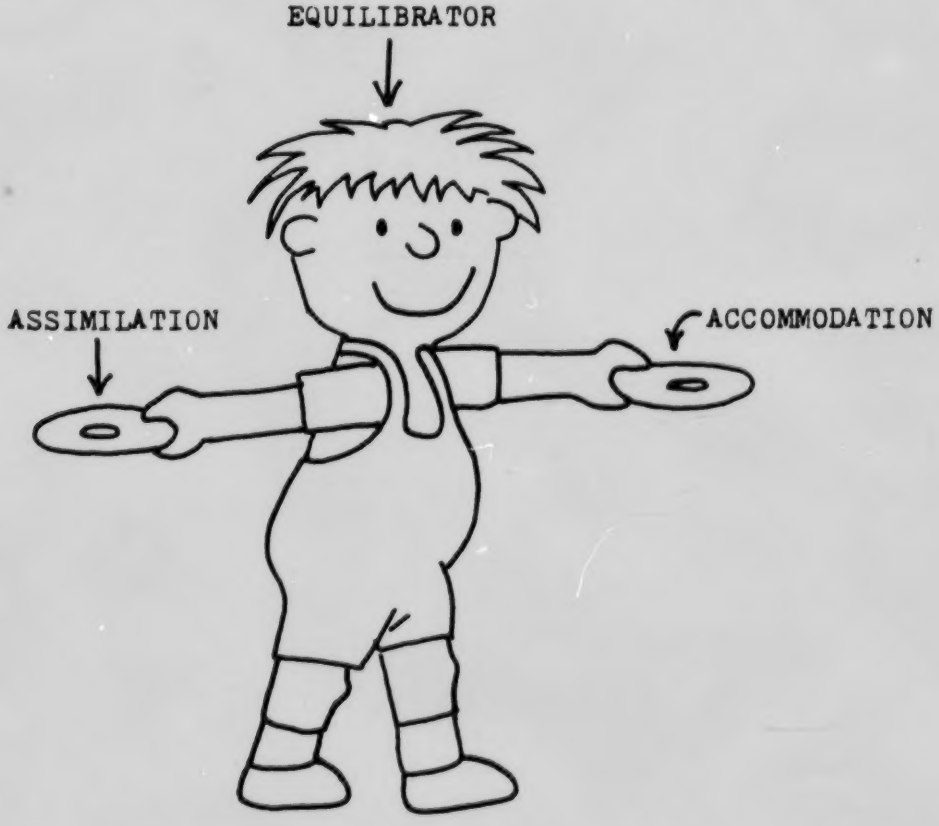
ACCOMMODATION is the act of CHANGING the knowledge the person already has so he can adapt to a new experience he has while interacting with the environment.


I have never handled a kitty before. When I crawled I couldn't handle a kitty. But now I can stand, so handling a kitty is easy (?)
(assimi-lation)
Before I can handle and pet this kitty, I will have to approach it differently then the way I did when I crawled. This is a new experience for me. How should I pick the kitty up to pet it? I will keep trying until I discover a way.
(accommodation)

EQUILIBRATION is defined by Piaget as the mental process a person genetically possesses (naturally has) that helps him balance or coordinate the processes of ACCOMMODATION and ASSIMILATION.

EQUILIBRATION is that part of all mental processes which helps us make sense of our experiences, and helps us understand how new experiences as new knowledge or information relate to old experiences as old knowledge or information.

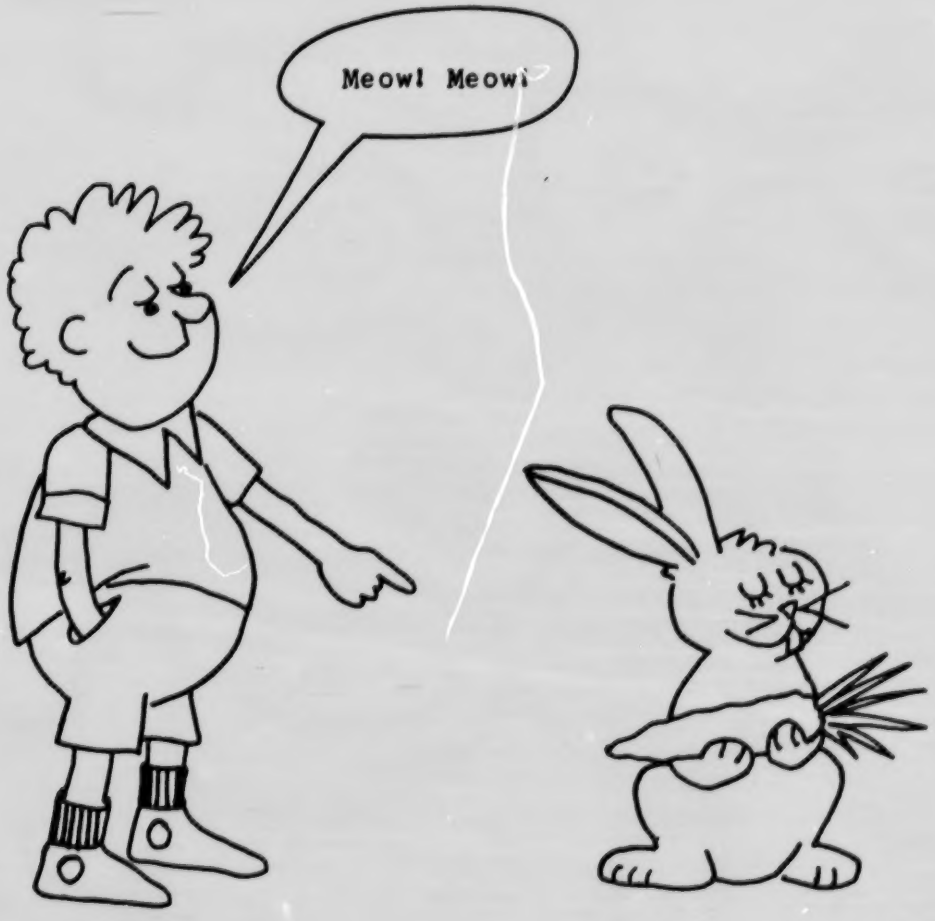
EQUILIBRATION is a natural part of all of use that helps us understand the experiences we gain from our environment through ACCOMMODATION and ASSIMILATION.



Put very simply, ASSIMILATION is "the taking in of new knowledge", while ACCOMMODATION is the "changing a person has to do in order to ADAPT to the new knowledge that is assimilated by the mind", and EQUILIBRATION is our WILL or innate ability to organize and make sense of what we "take in" and "how we must change ourselves in order to ADAPT".

ASSIMILATION, ACCOMMODATION, and EQUILIBRATION are interdependent, therefore, they must ALWAYS occur together during our mental development.

This concept can be better understood by this sketch:



This child does not know the rabbit from a cat because he has never experienced a rabbit before. Because he has only experienced cats and not rabbits, he makes a MEOW sound each time he sees rabbits. To him, this rabbit is a cat! In this case, this child is ASSIMILATING (or mentally "taking in") the new experience of the rabbit in terms of his previous experience with cats. Even though this child confuses rabbits with cats because of his lack of experience with rabbits, he must CHANGE (ACCOMMODATE) this new experience of the rabbit to fit his previous experience of cats before he can ASSIMILATE (or take the new experience in) at all. If this child had only experienced snails before, he would call the rabbit a funny looking snail instead of a cat!

Before a child can ASSIMILATE any new experience he must alter or change his previous experience so the new experience has meaning for him, and he can <u>understand</u> it. This form of understanding is false understanding to the adult, but until the child learns the difference between rabbits, cats, and snails through experience (interaction with his environment), his understanding of a new experience will always be in terms of what he has already experienced according to Piaget.

The meow sound this child makes is a result of EQUILIBRATION, or the child's WILL or ability to balance the taking in of the new experience (ASSIMILATION) with the changing (ACCOMMODATION) of the new experience of the rabbit so it would fit his previous experience of cats. EQUILIBRATING is necessary for understanding any thing we experience in our environments. Without the process of EQUILIBRATION there would be no way to fit new experiences with old experiences, and no understanding and mental development could occur.

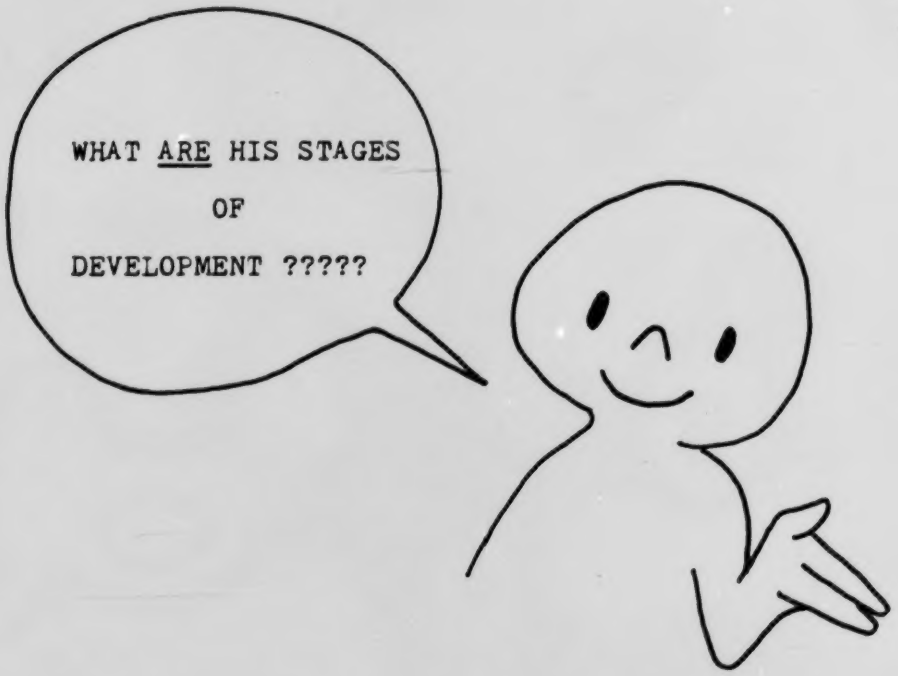
Here is another example of ASSIMILATION, ACCOMMODATION and EQUILIBRATION. The young boy in this sketch is trying to get at the cookie jar by pulling on the table cloth. Explain this sketch using these three Piagetian terms.

(If you have a difficult time explaining this sketch using the three terms of ADAPTATION, turn to page 19 for a possible explanation.)

Since Piaget bases his conception of intelligence upon adaptation instead of the current standard IQ, he USES adaptation as a means to identify the degree of a child's intelligence. Piaget believes the easier a child adapts to his environment, or the quicker a child adapts to his environment, the brighter he is.

Upon discovering that most children of the same age make essentially the same type of reasoning errors when their degree of adaptation is specially tested, Piaget formulated his "STAGE THEORY OF COGNITIVE[1] PSYCHOLOGY".

Piaget developed this stage theory to explain the phenomenon of "why some children reason in one way, and others reason in other ways when attempting to solve the same problem."



1 Cognitive will be used interchangeably with mental throughout this book.

Piaget observed four major stages of mental development which he believes covers a human's mental development from birth to adulthood, or beyond the age of twelve.

Although Piaget classifies these four stages of development according to chronological age (age in physical years), he only does so as a point of reference, since he did observe some children with mental development far beyond that which they were expected to possess.

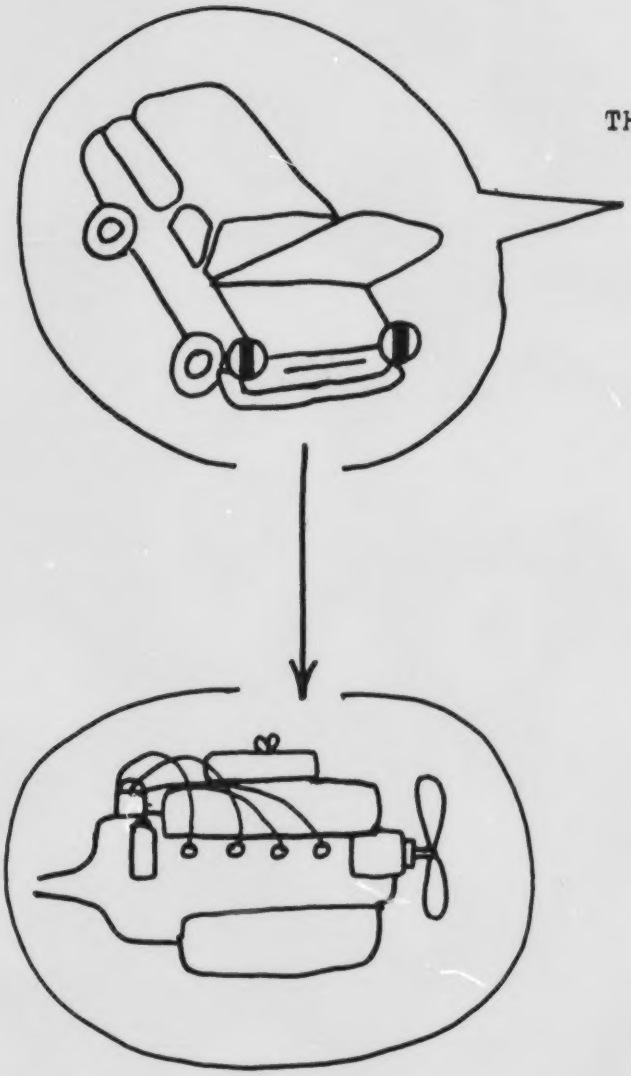
Piaget's four major stages of "Cognitive Development" are: The SENSORIMOTOR STAGE, the PREOPERATIONAL STAGE, the CONCRETE OPERATIONAL STAGE, and the FORMAL OPERATIONAL STAGE.

Each of these cognitive stages will be covered in the following Chapters: The SENSORIMOTOR STAGE with substages (Chapter II), the PPEOPERATIONAL STAGE with substages (Chapter III), the CONCRETE OPERATIONAL STAGE with substages (Chapter IV), and the FORMAL OPERATIONAL STAGE (Chapter V).

Possible Explanation Of
Sketch On Page 16

**Reaching for the cookie jar is ASSIMILATION, or the "taking in of an experience (a new experience)"; and ACCOMMODATION is the catching and eating of the cookies that fly from the falling cookie jar, or the "changing" of the position of the young boys hand from the table cloth to the contours of the cookie so it can be held and eaten. The ability to make sense of these two activities is EQUILIBRATION. The entire behavior of the young boy in this sketch is adaptation. In order to fully understand this you should view it as a process: first a person experiences something new (assimilation) and then he changes what he already knows and understands to fit this new experience or uses what he knows and understands to understand the new experience. In order to understand the new experience he must compare the new experience with what he already knows, his previous experience. This is accommodation: he is using what he knows as a means to adapt. This is the process of learning according to Piaget and occurs many, many times each time a person learns something new.

CHAPTER II



THE SENSORIMOTOR STAGE

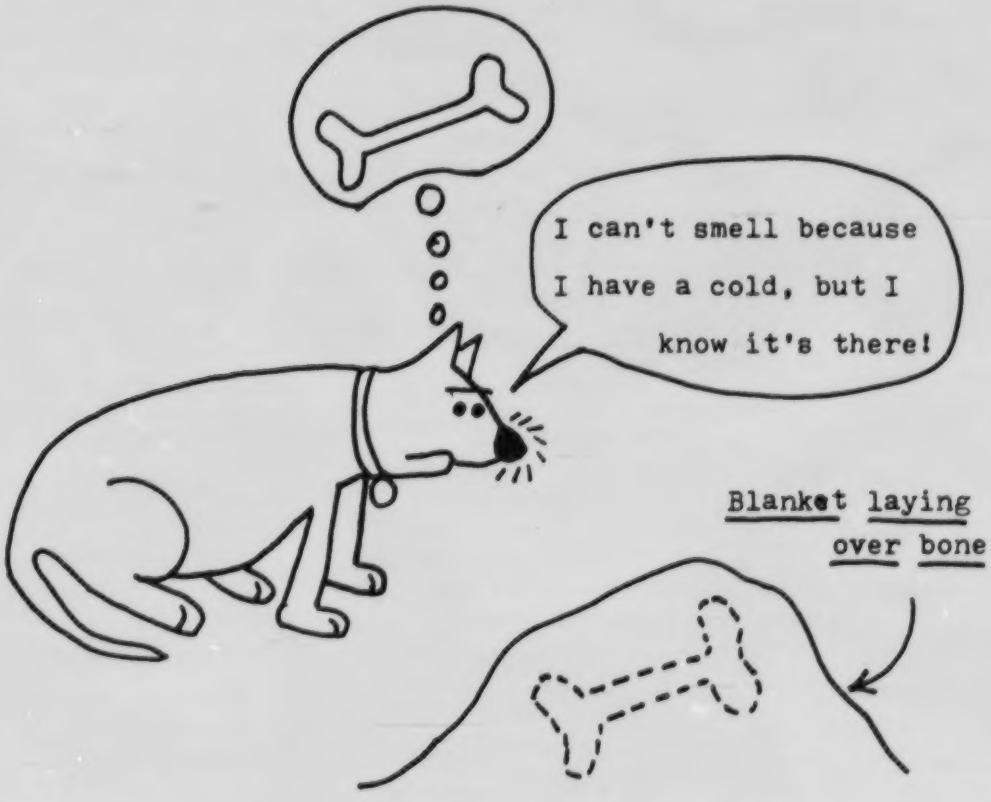
&

SUBSTAGES

The SENSORIMOTOR STAGE (birth to 2 years of age)

During this stage of development the child learns to tell the difference between himself and other objects in his environment. He gradually becomes aware of the relationship between his actions and their effects on the environment so he can act intentionally and make interesting events last longer. For example, if he pulls a stringed toy and it makes a noise he will continue to pull the toy to hear the noise.

It is also within this stage of development that the child learns that objects continue to exist even though the object is no longer visible. It is interesting to note that young dogs at about five months old exhibit this same characteristic. With the child this characteristic is displayed at about 8 to 10 months of age. This is called "OBJECT PERMANENCE".



The SENSORIMOTOR STAGE, like all the other stages of mental development are further broken down into what Piaget calls SUBSTAGES. which offers a more detailed explanation of how a child develops mentally.

It is important to note that according to Piaget each stage of development builds upon the other like a building block. If the child does not pass through the SENSORIMOTOR STAGE for example, he will never reach the PREOPERATIONAL STAGE or the other two stages beyond the preoperational stage.

There are six (6) substages within the SENSORIMOTOR STAGE.

<u>SUBSTAGE #1</u> (birth to about 1 month old)

REFLEXES--Unlearned responses

1. The sucking reflex
2. The rooting reflex
3. The moro reflex
4. The grasping reflex
5. The swimming reflex
6. The walking reflex

The Sucking Reflex

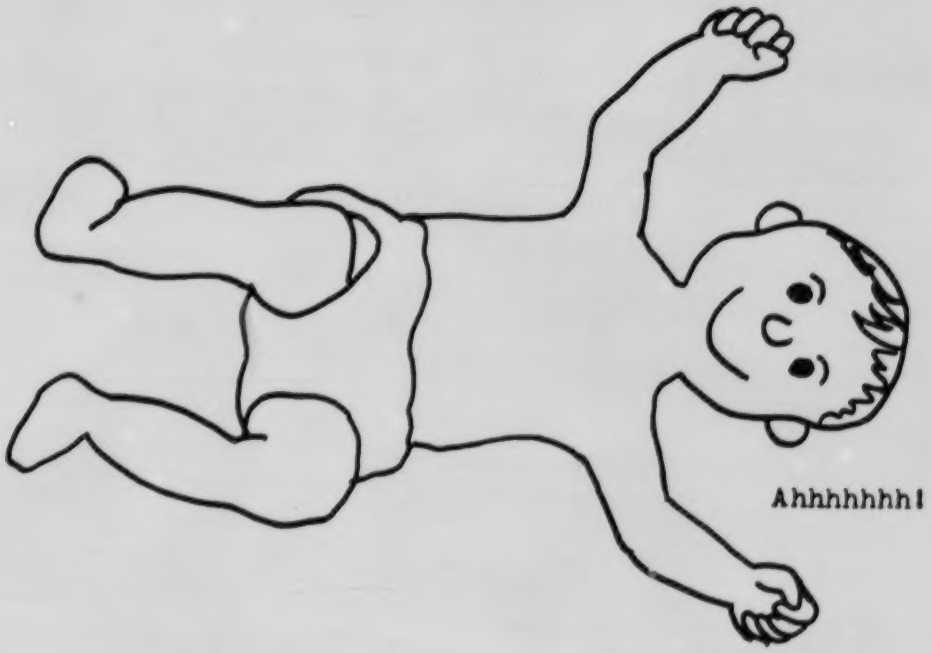
The new born infant is capable of sucking a bottle immdeiately after birth without any training!

The Rooting Reflex

This is the baby's tendency to turn his head and mouth in the direction of any object that gently stimulates the corner of his mouth!

The Moro Reflex

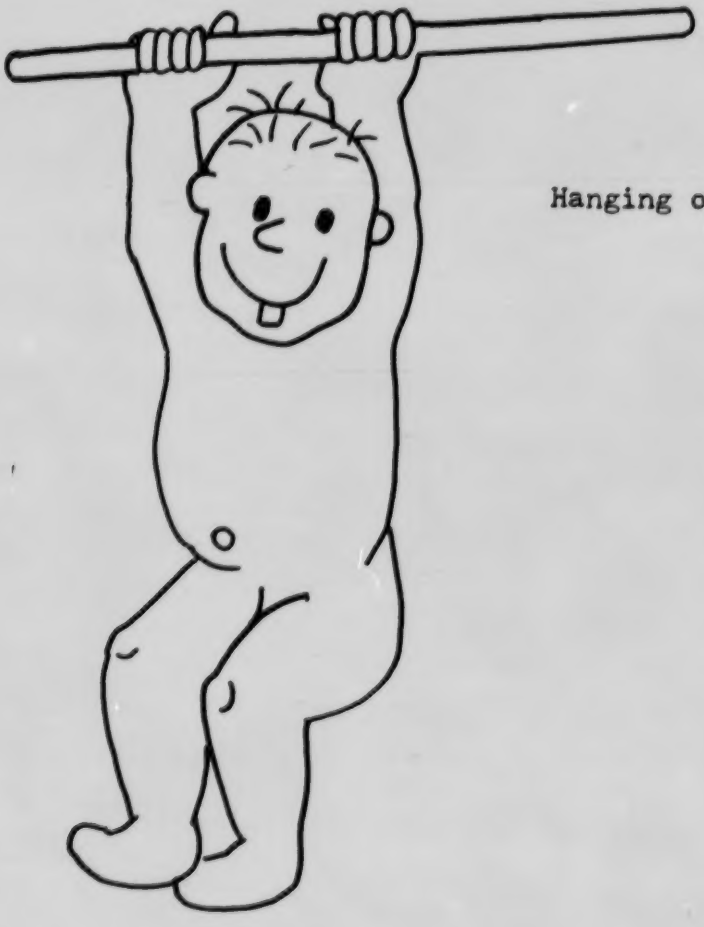
This reflex consists of thrusting out the arms in an embrace-like movement when the baby suddenly loses support for his neck and head!



The Grasping Reflex

In the first few weeks of life a baby can sometimes literally support his entire weight by hanging onto a stick or a person's finger--if the person's finger is strong enough!

This reflex is sometimes called the "Darwin reflex" because it was believed by some developmental psychologists that it was an instinct common to humans as decendants of aboreal (tree) apes!

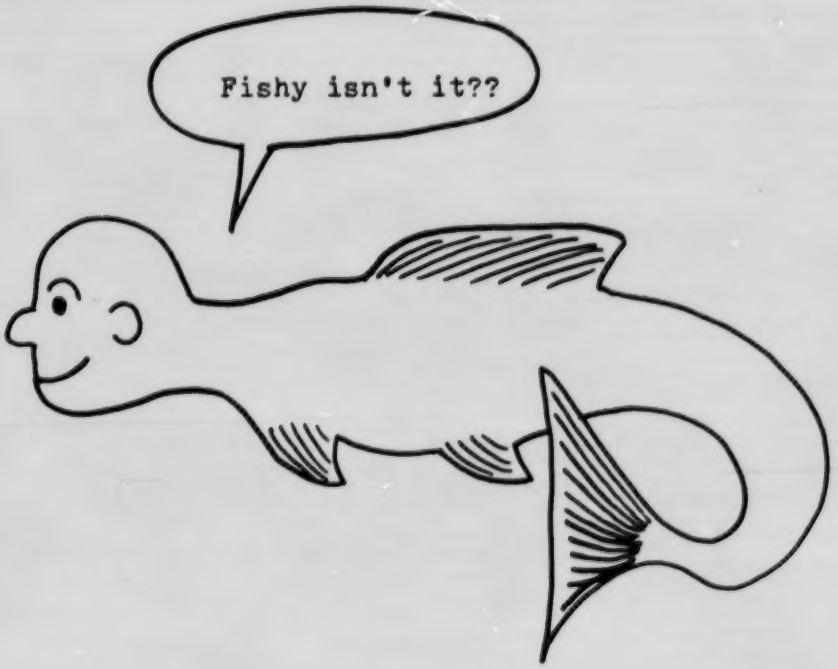


Hanging on!!

The Swimming Reflex

A few weeks after birth the baby will appear to swim if held belly down in a pan of water. Young children six months of age have been known to swim like tadpoles with very little instructions.

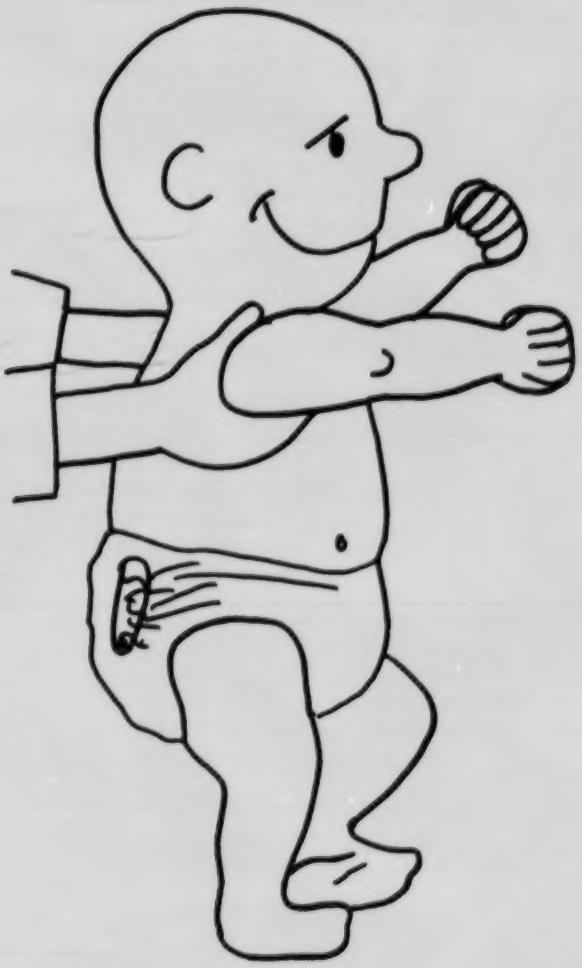
Swimming is a reflexsive response since for nine months each of us lived in the giant swimming pool of our mothers uterus.



The Walking Reflex

If a newborn baby is held at the armpits and lowered so his feet lightly touch a flat surface, he will move his legs back and forth as if he were walking!!

Weeeeee!



SUBSTAGE #2 (1 to 4 months old)

During this stage of development the first signs of learning are noticed. The child begins to develop well enough physically (motor skills) so he can crawl, and use these newly developed physical skills to aid him in his learning.

SUBSTAGE #3 (4 to 10 months old)

During this stage of development the child exhibits greater signs of learning by "intending" or "deliberately planning his actions!

Is this ASSIMILATION and ACCOMMODATION?

SUBSTAGE #4 (10 to 12 months old)

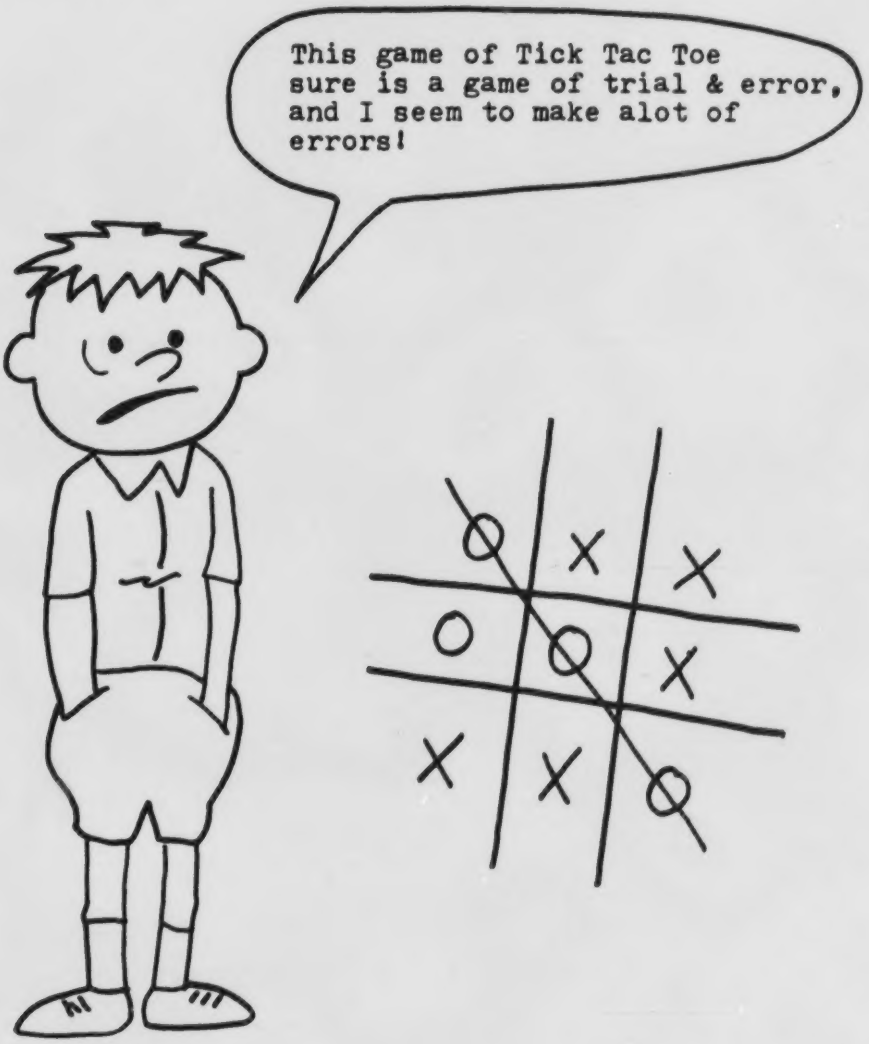
Somewhere between Substage #3 and Substage #4 the child learns that objects continue to exist even though the object is no longer visible. This is called "OBJECT PERMANENCE". In this stage of development the child also demonstrates greater intention, or the "pushing away of obstacles to reach a desired object or toy".

Another thing the child demonstrates in Substage #4 is the ability to identify objects he is familiar with by seeing only a 'part' of the object. This is called "OBJECT IDENTITY".

SUBSTAGE #5 (12 to 18 months old)

During this stage children usually learn to walk. Walking usually greatly aids a child in his mental development because it provides him with the opportunity to experience more of the world around him, and permits him greater independence in experiencing what he wants.

This stage is sometimes referred to as the AGE OF EXPERIMENTATION. It was in this substage where Piaget identified children with the ability to reason by "trial and error".



The last Substage of the SENSORIMOTOR STAGE was referred to by Piaget as the real "beginnings of pure thought This Substage usually occurs around the ages of 18 to 24 months.

SUBSTAGE #6 (18 to 24 months of age)

During this stage the child displays for the first time in his early life the ability to reason by simple "analysis", and no longer reasons by "trial and error" alone.

I wonder what the difference is between the sand in my right hand and in my left hand?
This sand looks like snow flakes when it falls through the holes in the sifter.

It is also during SUBSTAGE #6 that most children begin to learn mostly through IMITATION and MODELING.

Learning through IMITATION and MODELING is different. Below is a sketch of a child who is imitating the behavior of another. On the next page there is a sketch of a child modeling the behavior of another. Can you distinguish the differences? **

IMITATING anothers behavior

** See page 38

MODELING of anothers behavior

The next stage in Piaget's stage theory of mental development is called the PREOPERATIONAL STAGE. This stage of development is composed of seven substages. According to Piaget, the child is unable to progress into the PREOPERATIONAL STAGE if he has not gone through all the substages of the SENSORIMOTOR STAGE.

** The IMITATIVE child copies directly what he sees, whereas the MODELING child does not, but 'identifies' with a parent or another person.

CHAPTER III

THE PREOPERATIONAL STAGE & SUBSTAGES

My mind is developing even if I am asleep. It is now making the transition between my past development, the sensorimotor stage and the preoperational stage!
Are we ready Dr.?
Yes.

The PREOPERATIONAL STAGE (2 to age 6)

It is during this stage of development a child begins to use language to express himself, and can represent objects by images and words. Althrough the child still sees himself primarily as the center of his environment as he did during the SENSORIMOTOR stage, he now begins to understand the relationship of himself to his environment in much greater scope. During this stage a child usually learns to classify objects, use numbers in simple ways, tell the differences between the sizes and weights of objects, and is capable of understanding what Piaget calls "oddity problems", or discriminating 'one thing as different from two other things'.

SUBSTAGE #1 (**)

During the beginning of the PREOPERATIONAL STAGE a child begins to use language as a means to further his understanding of the world. At the beginning of this stage the child becomes quite 'conscious' of the rewards of using language as a means of communications.

The next sketch shows a PREOPERATIONAL child who appears to be quite conscious of his newly discovered ability to use language!

(**) It is more difficult to identify the substages of the PREOPERATIONAL STAGE by age in months, therefore all the substages in this stage of development will be referred to by substage number only.

"I DO NOT WANT to sit in this high chair ANYMORE!!!

SUBSTAGE #2

This substage is referred to by Piaget as the "stage of transductive reasoning", or reasoning from SPECIFIC to SPECIFIC. The child who classifies objects by referring to a specific feature of another object, is reasoning transductively.

In the sketch on page 42 the child is classifying the Trix cereal in his breakfast bowl as marbles because both the cereal and his marbles share the same SPECIFIC quality; roundness. This child therefore, thinks his marbles and the cereal are the same! According to Piaget, this child is mentally incapable of thinking differently.

SUBSTAGE #3

During this substage the child exhibits what Piaget calls EGOCENTRIC BEHAVIOR through his language and his actions.

Piaget's research has shown that children below the age of seven or eight seldom have the mental ability to understand another person's point-of-view.

Piaget further believes that the process of becoming mentally developed is LOSING the 'egocentrism', and learning to understand other peoples opinions. Unfortunately, some people never seem to understand another person's point-of-view no matter how old they are!

I am 13 years old now and you still do not understand me! You just don't understand!!!
I still don't understand people. I don't understand how you can say the things you do Harry. You are always spouting your opinions and I do not like it!!

Piaget has also described EGOCENTRISM as the PREOPERATIONAL child's perceptual <u>inability to visualize objects</u> from someone else's position.

When the 'egocentric' child is asked to draw a sketch of a doll as another person sees the same doll but from another spatial position relative to it as the below illustration shows, the egocentric child will draw the doll ONLY as he sees it from his position and will not draw the doll as the other person sees it which will be the reverse of how the child sees the doll from his position.

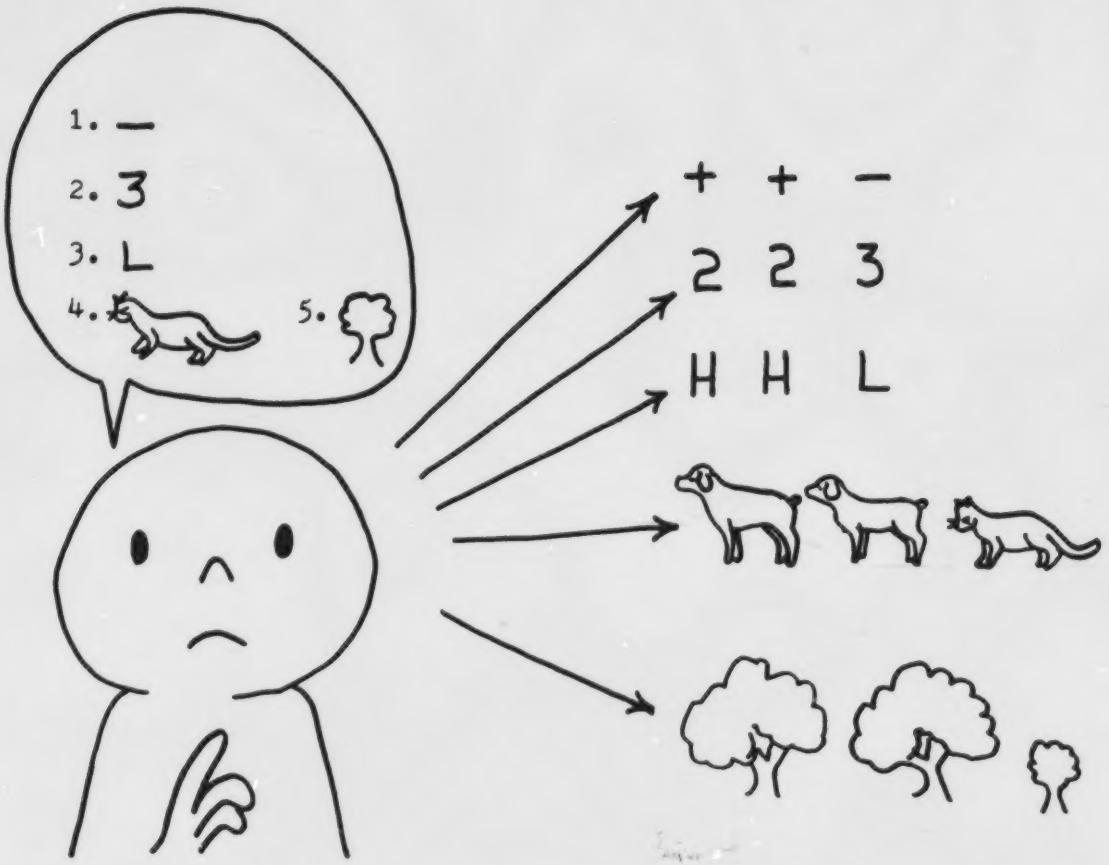
When I try to see through the eyes of my older sister I still see the doll the same way, with the dolls purse on the left arm
From my position the dolls purse is on her right arm.

SUBSTAGE #4

It is during Substage #4 that the PREOPERATIONAL child begins to classify objects of similar and different kinds. By this time in the child's development he can classify objects by shape as well as color.

SUBSTAGE #5

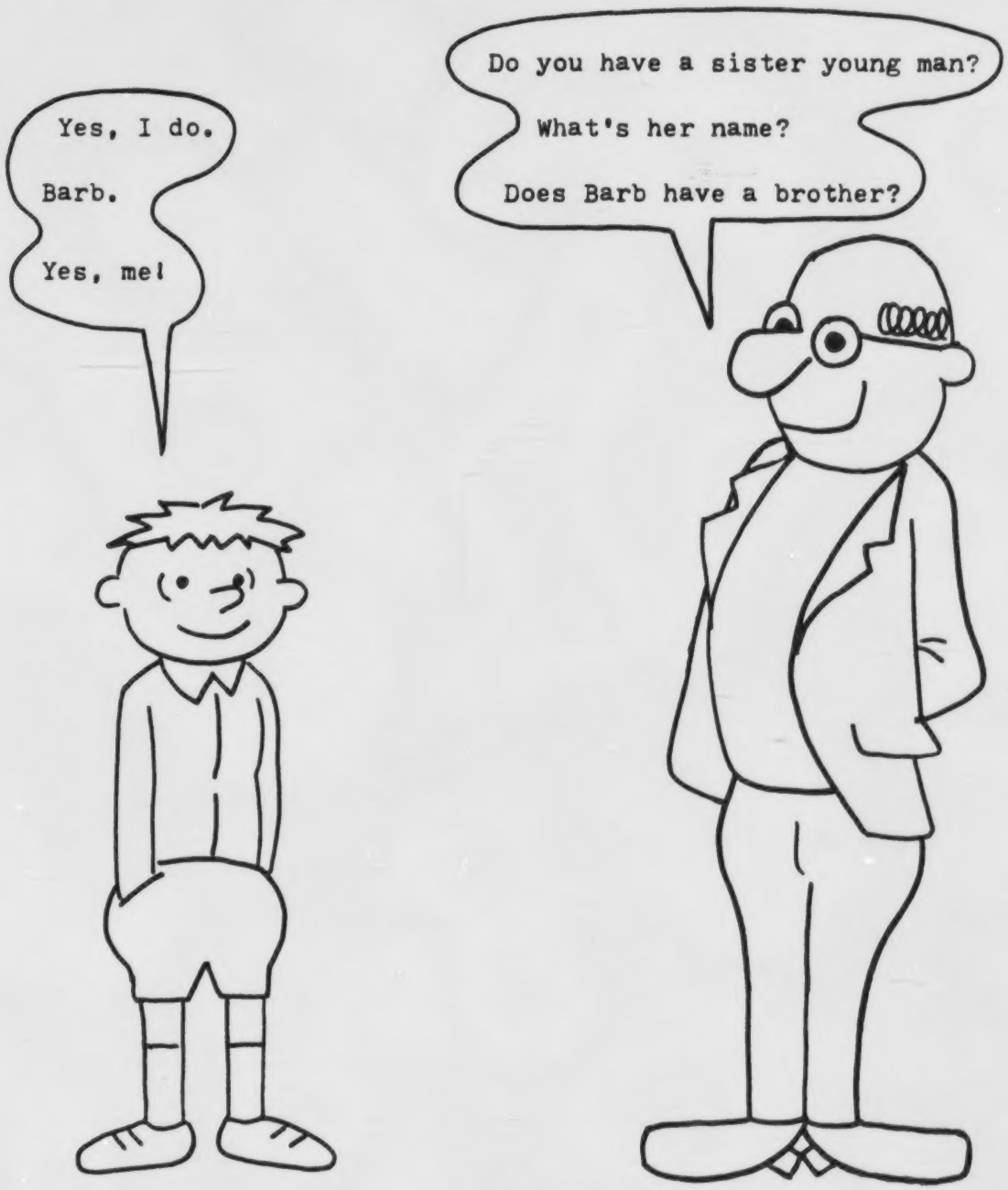
By the time the PREOPERATIONAL child reaches this stage of development he can discriminate or tell that one thing is different from two other things that look alike. Piaget calls this ability, ODDITY ABILITY.



SUBSTAGE #6

The child's ability to think and to use language to aid him in thinking becomes more advanced by the time he reaches this stage of mental development.

During this substage the child begins to display the ability to think in REVERSE ORDER.



If the child learns to use numbers in Substage #6 of the PREOPERATIONAL stage of development, he will also be capable of thinking numerically in reverse order.

THEN

When a child is capable of thinking in REVERSE ORDER using both language and numbers, he is beginning to progress into the CONCRETE OPERATIONAL STAGE.

SUBSTAGE #7

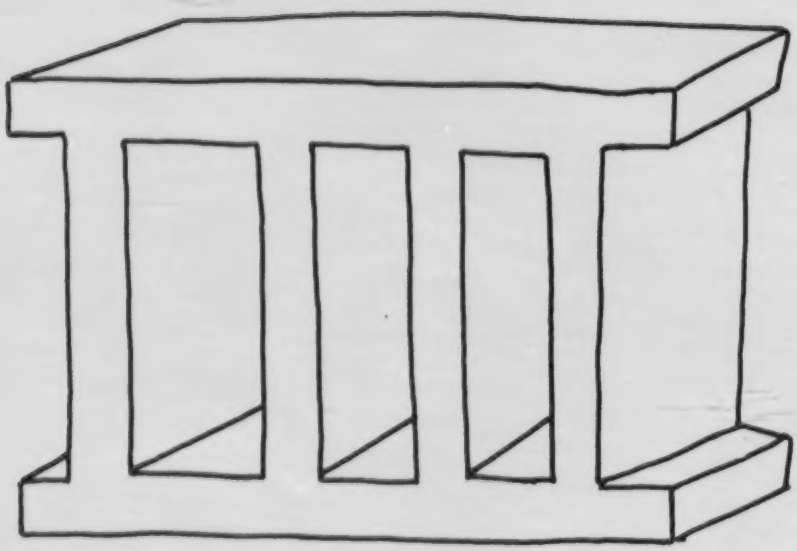
Substage #7 is the child's stepping stone from the PREOPERATIONAL STAGE to the CONCRETE OPERATIONAL STAGE, or the beginning of the CONCRETE OPERATIONAL STAGE of mental development.

When a child has developed as far as this substage, he is better able to understand reversal problems, or more complicated reversal problems.

Before and during the PREOPERATIONAL stage of development a child's thinking is primarily dominated by his perceptions. Prior to the third major stage of mental development, the CONCRETE OPERATIONAL stage, a child can easily be foiled by adult reason because his thinking is predominately controlled by what he sees instead of how he interprets what he sees. It is not until the CONCRETE OPERATIONAL stage that he becomes 'slightly' capable of abstract reasoning.

CHAPTER IV

THE



ONCRETE

OPERATIONAL STAGE & SUBSTAGES

The CONCRETE OPERATIONAL STAGE (6 to 12 years of age)

This major stage of mental development is the first of the OPERATIONAL stages. During this stage of development a child is only capable of reasoning by referring to 'concrete' objects immediately present in his environment.

Young boy, can you give me directions to your house?
I live by the lake. I know my house exists, I know my address, but I cannot give you directions, since I cannot see the streets.

The CONCRETE OPERATIONAL child's reasoning is mentally tied to 'concrete' reality. He must have real objects upon which to 'operate'.

These mental OPERATIONS occur when a child is able to "internalize" a personal experience of his environment and then reverse it.

Non-technically, an OPERATION, according to Piaget is a reversible thought. The PREOPERATIONAL child first displayed reversal thought in Substage #6 when he added and subtracted numerals, and was also able to reverse words in sentences.

During the CONCRETE OPERATIONAL stage the child's mind is better equipped to handle more complicated 'operations'.

Although the CONCRETE OPERATIONAL child can handle more complicated 'operations' he is still incapable of mentally abstracting to all possible combincations of a given problem like older children.

During the CONCRETE OPERATIONAL stage the child also becomes capable of simple logical thought or 'operations'. This child begans to understand what Piaget calls "CONSERVATION PROBLEMS".

This ability is not found in the thinking of the SENSORIMOTOR child, but is sometimes found near the end of the PREOPERATIONAL stage.

This ability has nothing to do with our environment!!

I wonder if anyone will care if I litter?
BEER
What a terrible man! He doesn't care about conservation, or keeping our land clean, like me.
My dad, Dr. Piaget said people who litter are not nice, but this is not what my dad means by "conservation".

What is CONSERVATION if it has nothing to do with our environment?

Look here now! By conservation Piaget means the child realizes that one aspect of something remains the same, while another aspect is changed.
See, she understands the conservation of quantity!
You haven't given me more pop because it is now in a taller glass!

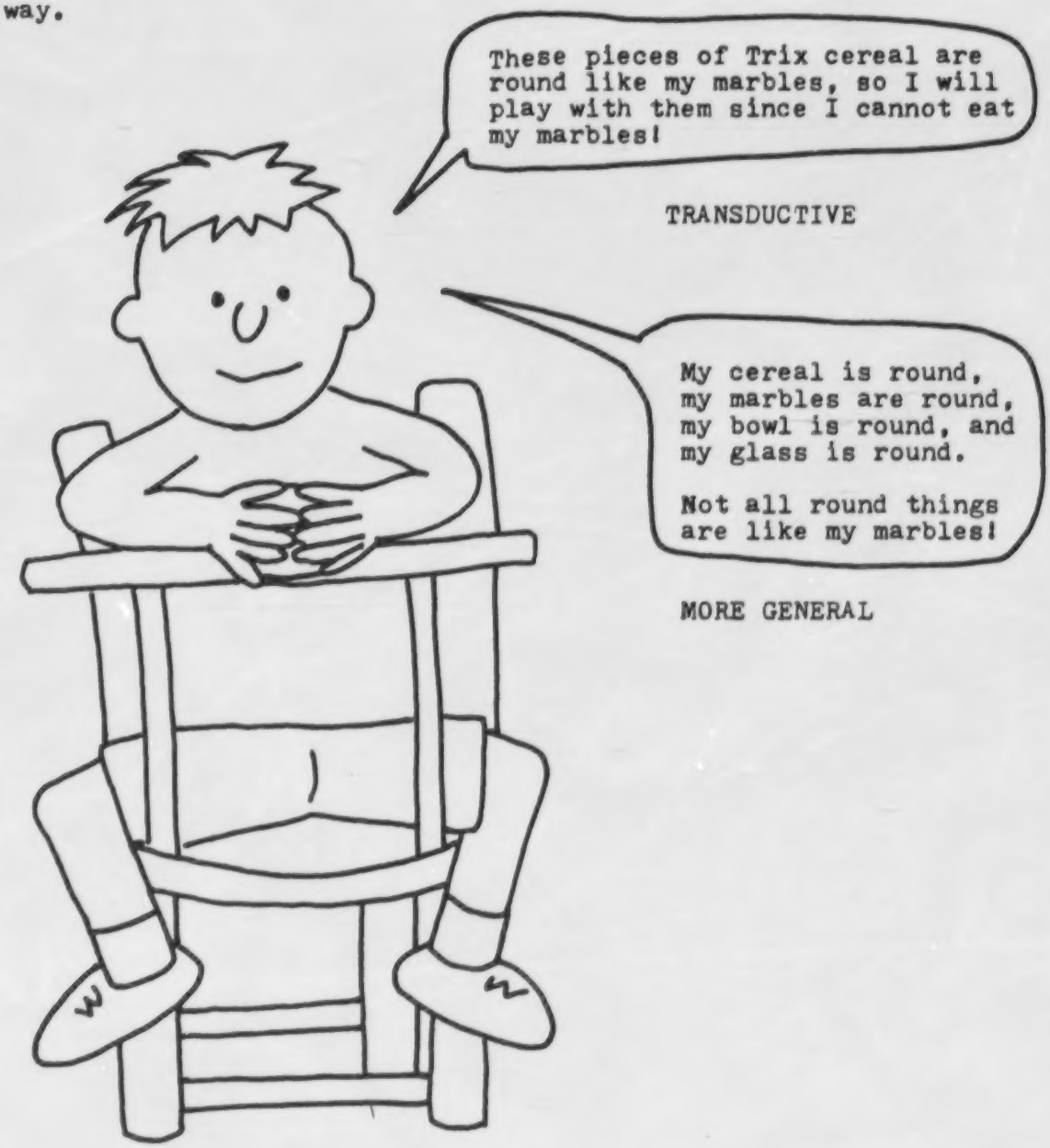
The child usually achieves an understanding of the conservation of numbers at age six (6), of mass at about age seven (7), of weight at about age nine (9), and of volume at about the ages of eleven (11) or twelve (12), the beginning of the FORMAL OPERATIONAL stage.

During the CONCRETE OPERATIONAL stage the child can also classify objects and put them in serial order along a dimension, or put them in order from large to small or small to large, and can understand something called "transitivity" and "simple induction".

The CONCRETE OPERATIONAL stage is divided into four (4) Substages.

SUBSTAGE #1

Characteristic of this substage is the child's capability to reason in more general terms. He is now beginning to "move away" from transductive reasoning to reasoning in a more general way.


These pieces of Trix cereal are round like my marbles, so I will play with them since I cannot eat my marbles!
TRANSDUCTIVE
My cereal is round, my marbles are round, my bowl is round, and my glass is round.
Not all round things are like my marbles!
MORE GENERAL

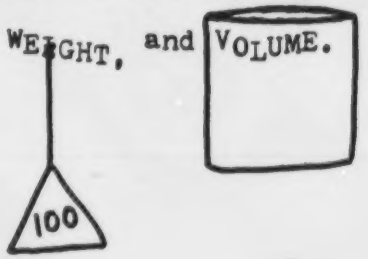
SUBSTAGE #2

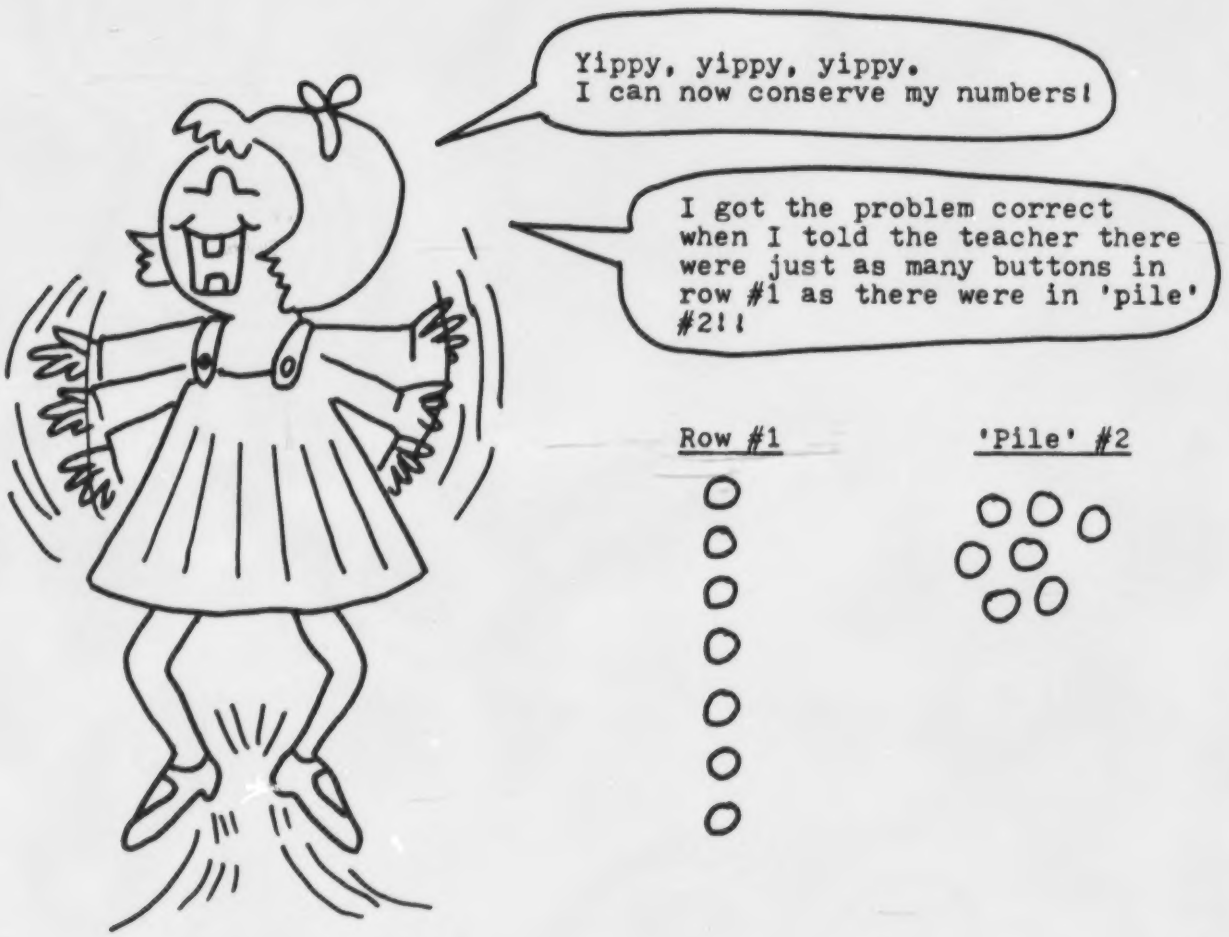
During this substage a child begins to understand more complicated REVERSAL problems.

SUBSTAGE # 3

Although most children seem to understand 'conservation' problems in their elementary forms during the PREOPERATIONAL stage, it is not until the CONCRETE OPERATIONAL stage that they develop this ability more fully.

During this substage the child is usually capable of the conservation of NUMBERS, MASS, WEIGHT, and VOLUME.




Yippy, yippy, yippy.
I can now conserve my numbers!
I got the problem correct when I told the teacher there were just as many buttons in row #1 as there were in 'pile' #2!!
Row #1
'Pile' #2

CONSERVATION of MASS:

If we pulled this long piece of clay from a ball of clay that looked like this
will our stretched hot dog looking piece of clay contain more clay than the beginning ball of clay??
Nope it doesn't!!!!
If you guessed right you are able to conserve
MASS!

CONSERVATION of WEIGHT:

If we have two clumps of clay both weighing 5 pounds each

and

we roll the left one on the scale into a long hot dog shape, and leave the right one on the scale in the clump shape, will the one rolled into the hot dog shape still weigh the same as the one left in the clump shape??

If you understand that the weight of the clump does not change when its shape is changed, you understand the conservation of

WEIGHT!!

CONSERVATION of VOLUME:

To discover if Mr. DEVELOPED understands the concept of the conservation of VOLUME, we will present him with two identical bowls, each filled with water and an identical clump of clay

and then by letting him watch, remove one of the clumps, roll it into a hot dog shape right before his eyes, and ask him if the hot dog shape will displace (take up an equal space of water) the same amount of water as the other clump of clay that wasn't rolled into a hot dog shape and is still setting in the other bowl.

If he answers us by saying, "both 'clumps' of clay still take up equal amounts of water when place in the bowls regardless of their shapes," he is conserving

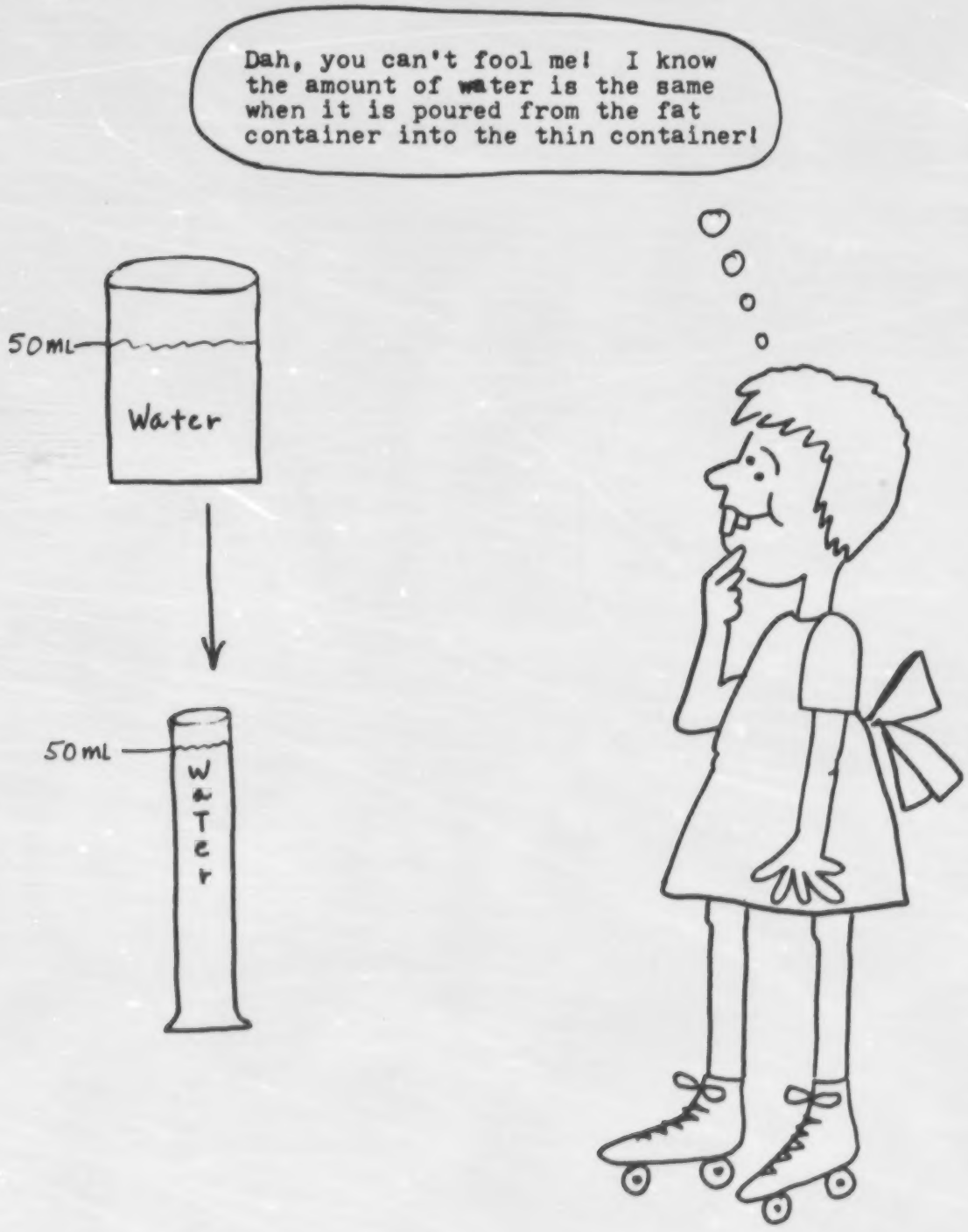
VOLUME!!

Other forms of "conservation tasks" which have been created and used by cognitive psychologists as a means to further their understanding of the mental development of children have been: the CONSERVATION of LENGTH (age 6-7), the CONSERVATION of AREA (age 9-10), and the CONSERVATION of LIQUID QUANTITY (age 6-7).

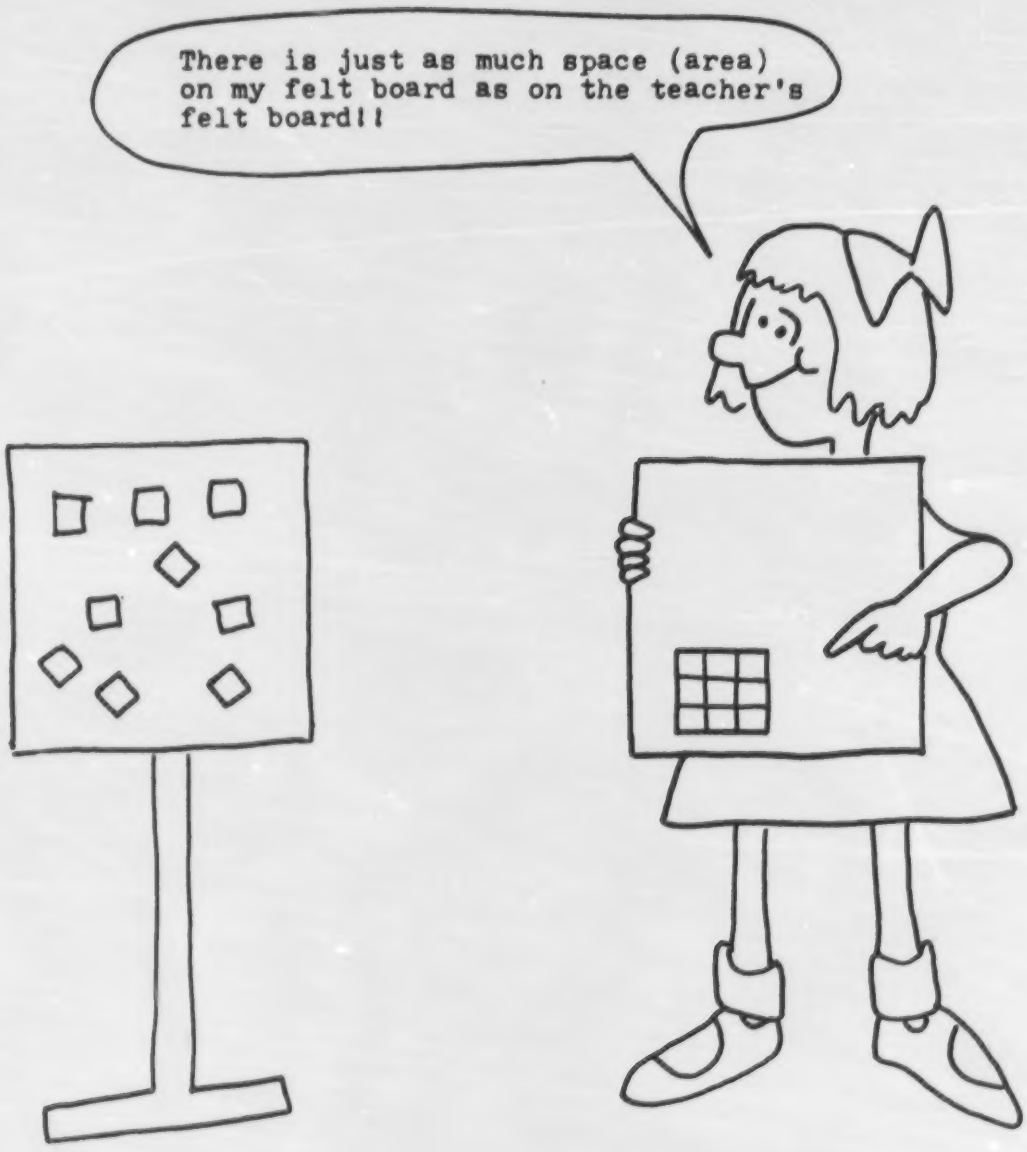
CONSERVATION of LENGTH

I understand the 'conservation of length'.
I know that both these sticks are the same length even though one of them is moved from its original position next to the other one!!

CONSERVATION of LIQUID QUANTITY


Dah, you can't fool me! I know the amount of water is the same when it is poured from the fat container into the thin container!
50ml
Water
50ml
Water

CONSERVATION of AREA

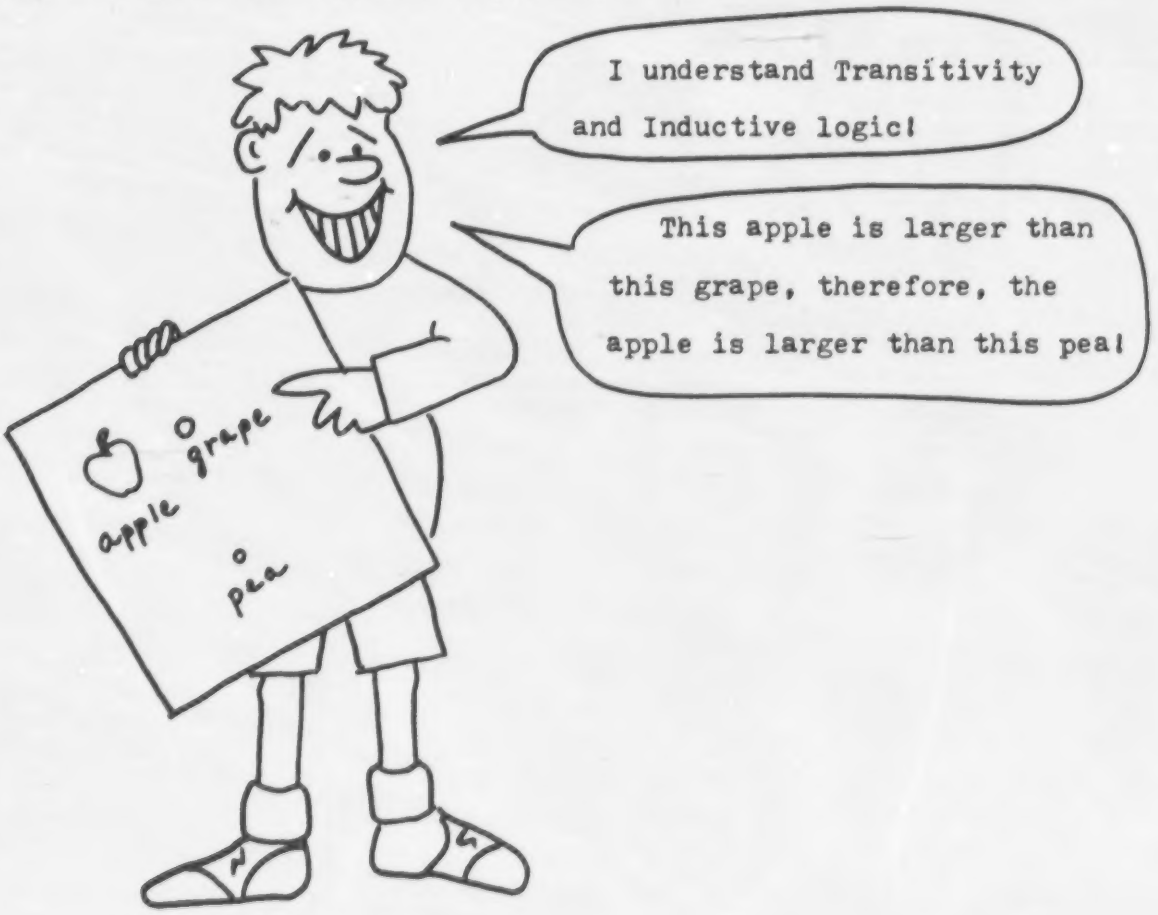


There are many more possible 'conservation tasks' that can be created to evaluate the mental development of a child besides the ones previously illustrated. Some others will be covered in Chapter VI, Suggested Methods Of Evaluating Your Knowledge Of This Book.

Meanwhile the CONCRETE OPERATIONAL child must pass over Substage #4, the bridge between concrete thinking and formal thinking or thinking which is purely abstract and not dependent upon direct experience of the environment.

SUBSTAGE #4

It is during this substage that most children can solve problems of TRANSITIVITY and simple INDUCTIVE LOGIC as long as they can observe 'concrete objects'.


I understand Transitivity and Inductive logic!
This apple is larger than this grape, therefore, the apple is larger than this pea!
apple
grape
pea

CHAPTER V

This is the stage of formal logic!
More brain than brawn is used in this stage!
FORMAL
LOGIC
"all children are brats
all brats are rats
therefore, all children are RATS!"

THE FORMAL OPERATIONAL STAGE

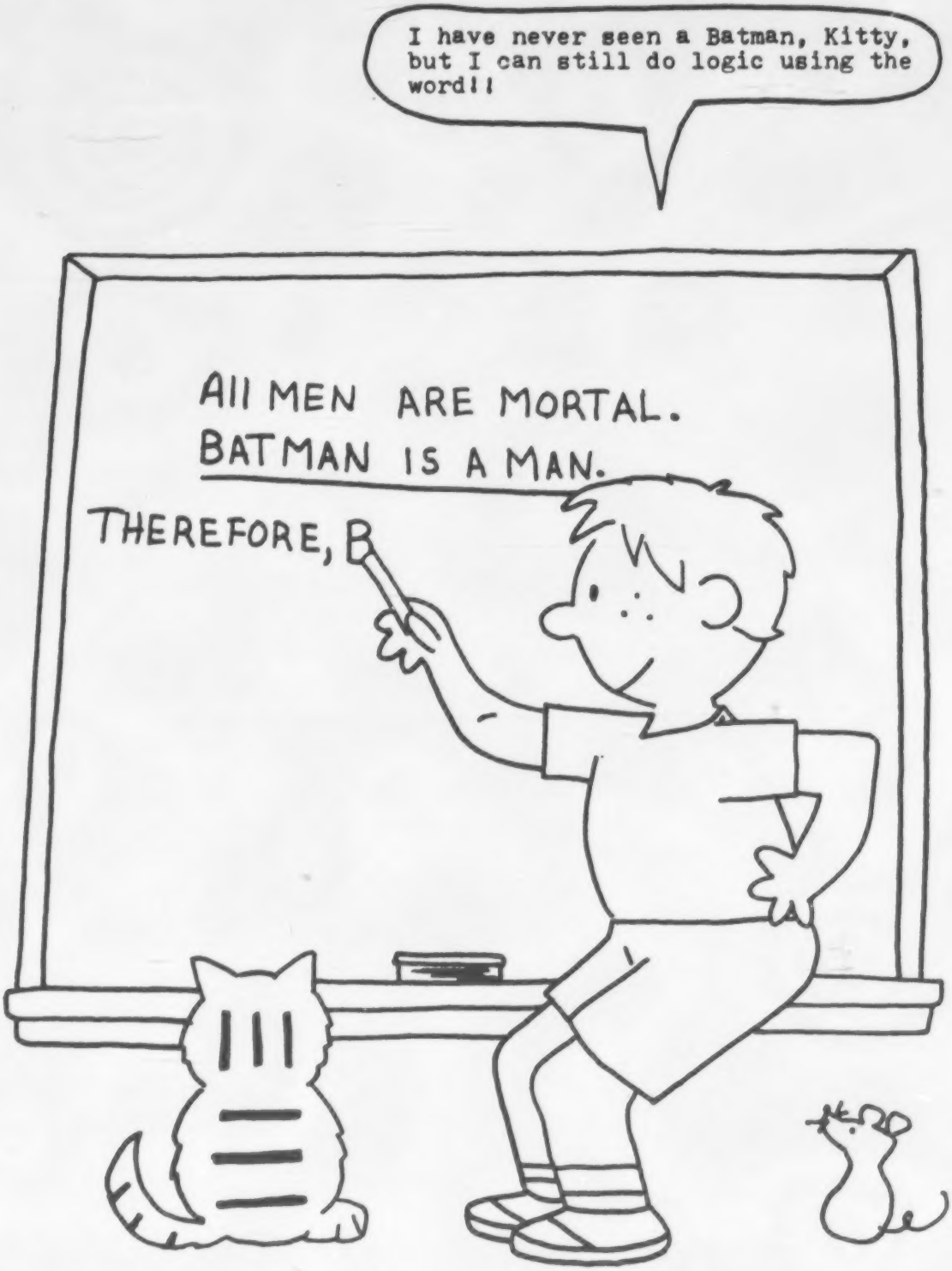
The FORMAL OPERATIONAL STAGE (12 to any age!)

The term formal means the child can now reason using his head alone without the need of referring to an object, or an event which he must see, feel, taste, hear, or smell! The child who exhibits characteristics of this stage of development need not depend upon actual physical experiences to understand something.

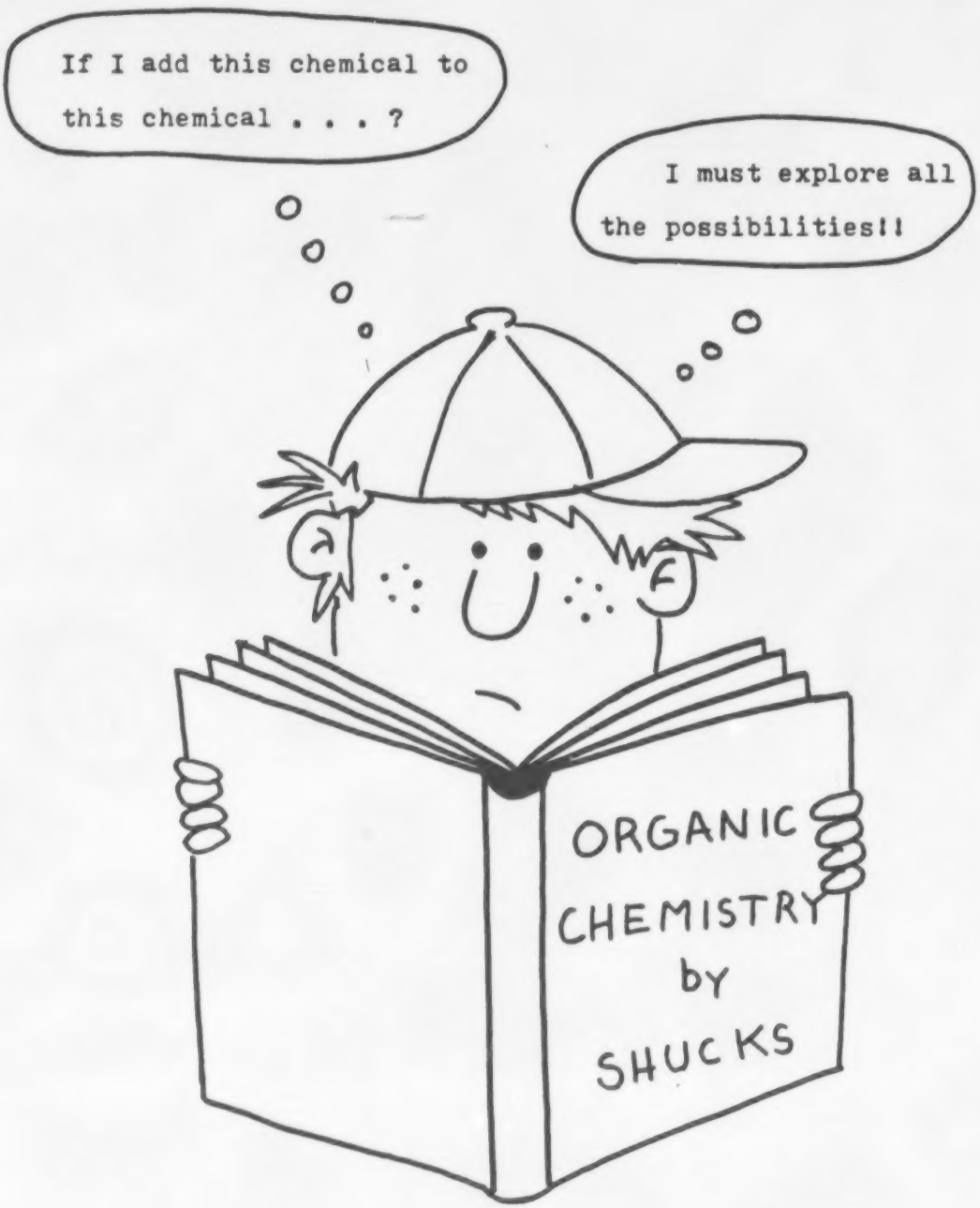
If someone puts a sack over my head I will still be-able to reason!
I can understand what a million ice cream cones are even if I have never seen a million ice cream cones!

It is usually only during this stage of development that the child can think in purely abstract terms. As a matter of fact, many people, regardless of age, never reach this stage of development according to Piaget!

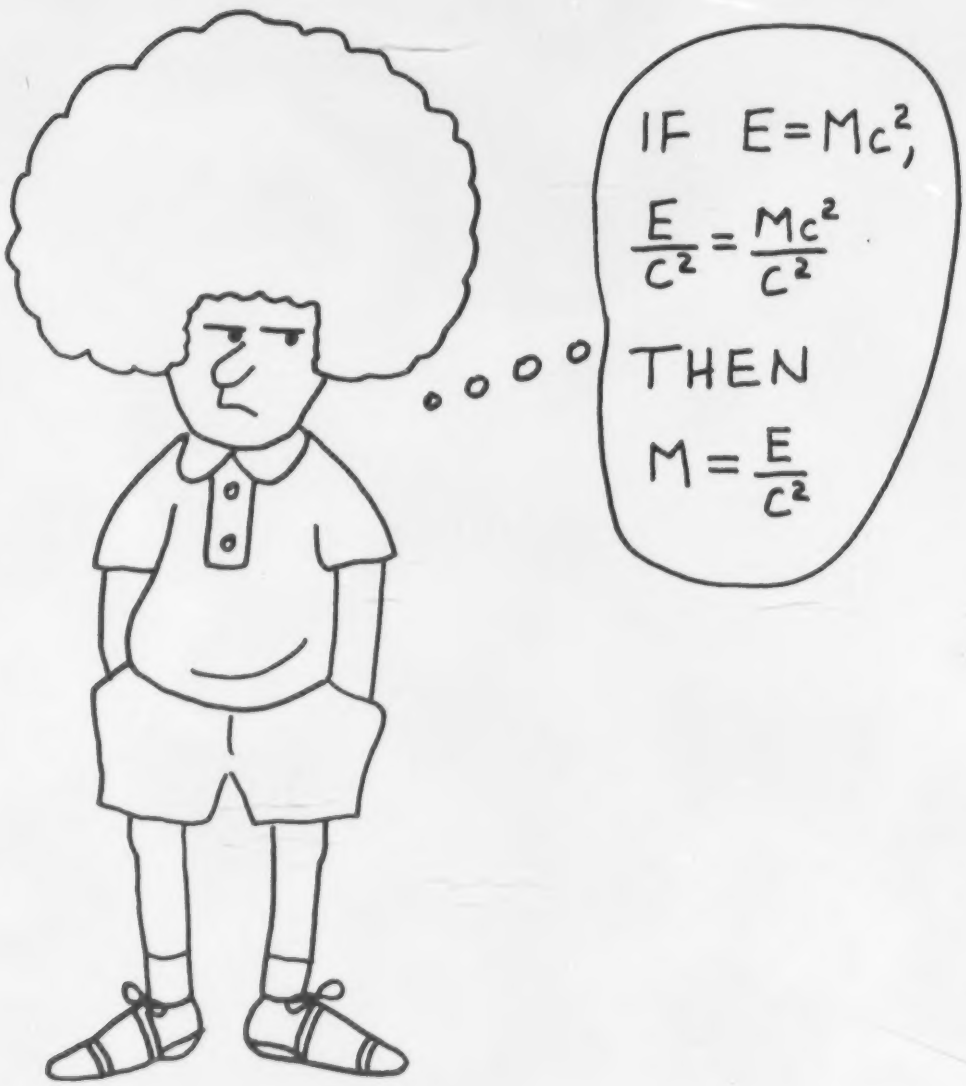
If a person reaches this stage of mental development they are also able to follow logical propositions.



The person who can think in formal operations can reason by HYPOTHESIS, and isolate the elements of a problem and systematically explore all the POSSIBILITIES and PROBABILITIES by appealing to pure reason.



Thinking is sometimes far more difficult than doing. This FORMAL OPERATIONAL child cannot observe these mathematical equations as concrete objects but can deal with them and understand them by just thinking about them.



Now that you have a basic understanding of Piaget's stage theory of mental development, it is time for you to test your understanding of it, and apply it to actual life experiences.

In the next two chapters you will be given this opportunity.

CHAPTER VI

SUGGESTED METHODS OF EVALUATING YOUR KNOWLEDGE OF THIS BOOK

This Chapter was created primarily for the student who wants to test his knowledge of Piaget's stage theory and apply it, without the direct guidance of a teacher.

The author of this book has effectively used four (4) student "self-tests" or "self-evaluation exercised" that have ostensibly helped his students better understand Piaget's work both in theory and in practice. The first exercise, THE ALTERNATE TASK EXERCISE, is intended to help you, as a beginning student of developmental psychology, to better understand Piaget's concept of "conservation", and use it to determine a child's level of mental development.

If you use this exercise to evaluate your understanding of "conservation", you should quickly discover the 'reality' of Piaget's theory and learn to appreciate individual perceptual and cognitive rates of development among children.

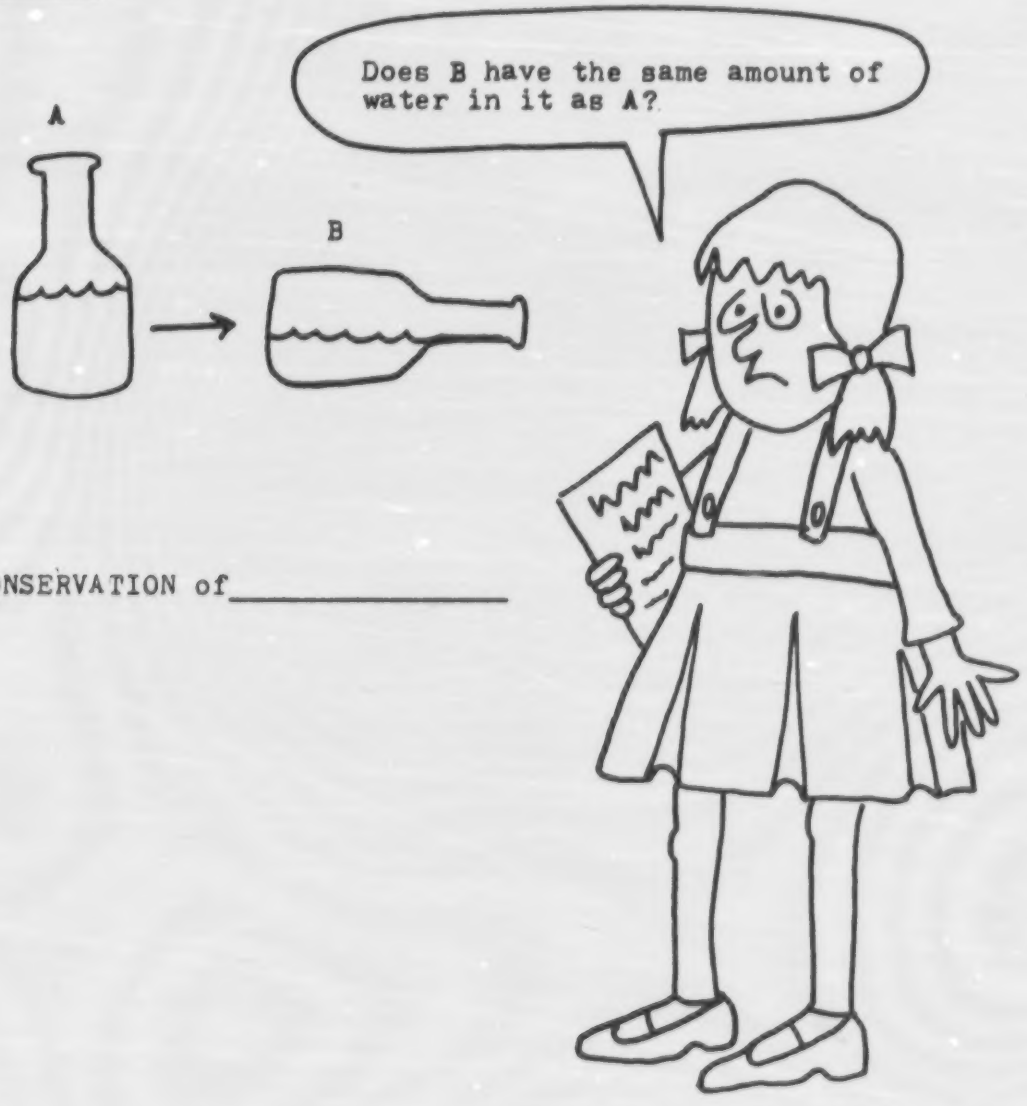
This exercise should also help you to understand Piaget's conception of QUALITY of thought, or the different ways children of the same chronological age will mentally approach or attempt to solve the same task or problem. After 'experiencing' this exercise you should understand that these differences in thought are only differences in the QUALITY of thought, and are NOT "right or wrong ways" to solve the same problem or task! Therefore, if you experience a child mentally approaching a problem differently from the way you would approach the same problem, or differently from the standard usual way of approaching it, don't criticize the child for not conforming. Instead, examine the probable effectiveness of the child's approach. If you already have tons of patience or can cultivate considerable patience, you may be surprised to discover the many and effective ways children think.

RULES OF THE EXERCISE

1. Go back to Chapter IV and review the concept of "conservation", and the sketches illustrating it.
2. Examine the sketches on the next few pages an determine the type of conservation each symbolizes. This will require some creative thought on your part. If you cannot name the type of conservation each sketch symbolizes, turn to page 85 for a possible naming.

3. Create three or four of your own conservation tasks and test them on several children.
4. Record your observations of how these children approached your created conservation tasks an try to determine their level of mental development.
5. (The children you 'test' should be between the ages of five through seven instead of the usual two through six which should account for any transition period between stages.)

SKETCH #1

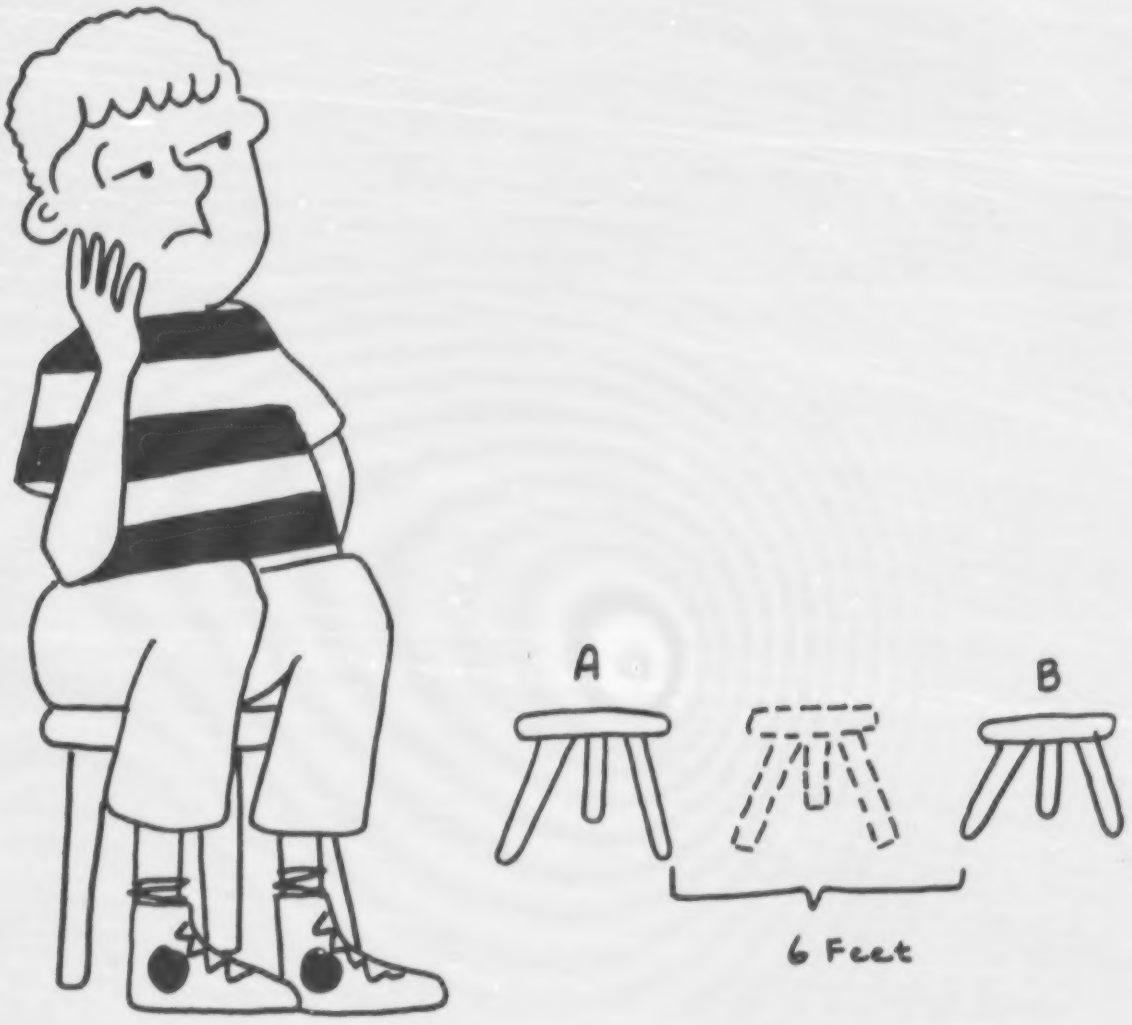


CONSERVATION of_____

SKETCH # 2

If another stool is placed between stool A and stool B will the distance between the two stools be the same??

CONSERVATION of_____

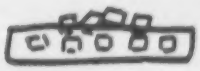


SKETCH #3

I am not sure there is the same amount of paper in the second box as there is in the first box!

First box

Second box



("The same size sheet of paper is in both boxes except the sheet of paper in the second box is torn into small pieces")

CONSERVATION of_____

SKETCH #4

If I dump the sand from these sand pails onto the ground will the sand from the pails now on the ground equal the amount of sand that was in the pails?

CONSERVATION of_____

There are virtually as many examples of conservation as a persons imagination permits. One of the best ways to "test" the conservation ability of a child is to create conservation tasks from an environment familiar to the child. It is now time for you to create some of your own conservation tasks which you can use to test a child. Remember: CONSERVATION IS A CHILD'S ABILITY TO RECOGNIZE THAT ONE ASPECT OF SOMETHING REMAINS THE SAME WHILE ANOTHER ASPECT CHANGES.

The second evaluation exercise which should help you better understand the contents of this book is THE QUESTION CREATION EXERCISE or THE SELF-DIALOG. The author of this book believes that if a person can ask 'good' questions about a subject, he then at least partially understands it. Some great thinkers of history have claimed asking questions is a sign of learning and the only means of gaining understanding. Asking yourself questions about any subject seems to be a SELF-LEARNING and MOTIVATING EXPERIENCE. By using this exercise you should discover this. You should discover that asking one question serves only as a mental appetizer for more understanding, and will lead you to ask yourself many more questions, which you will feel must also be answered. This activity should result in greater depth of understanding and spur your mind to continue to asks as many questions as possible so even greater understanding is experienced. You should also discover that asking and answering your questions is more rewarding than answering questions put to you by a teacher, since your own answers to your own questions validates your ability to play the role of a teacher which may be rewarding in itself and encourage learning.

The 'rules of this exercise' ask that you become part of this historical method of learning and understanding and enjoy its success.

RULES OF THE EXERCISE

1. Reread the book.
2. As you reread the book, jot down questions that come to your mind out of 'confusion' or the desire to know more about the subject. The type of questions you should ask yourself should be questions of COMPARISON and DEFINITION, or any other type of question that 'goes beyond' what you read. For example, the question, "What is the comparison between the Sensorimotor stage of development and the Preoperational stage of development?" goes beyond what you read since this question cannot be directly answered by the contents of the book. The answer to this type of question must be supplied by your own thought process and cannot be 'copied' from the book contents. Questions of DEFINITION must be ask in the same way. For example, the question, "What is the definition of a mental operation?" also cannot be directly answered by the book contents. In order to answer this question you must synthesize from what the book gives you.

   Any question you create from reading the book,and ask yourself, must be answerable from your own mind and cannot be copied directly from the book contents. The question, "What is the rooting reflex?" can be answered directly from the book contents because it requires only information for an answer which is directly given by the book, and therefore is not a 'good' question or acceptable as required by the rules of this exercise.

3. After you have reread the book and jotted down your questions, put the book aside and then proceed to answer the questions you have created. DO NOT AT ANYTIME DURING THIS ANSWERING PERIOD LOOK AT THE BOOK!!!

The third exercise is called THE PROGRAMMED-TEXT EXERCISE. The author of this book has discovered through his experience using programmed texts that students appear to understand 'programmed text" material better if they construct their own 'programs' instead of filling in the blanks provided by an already constructed program. By constructing your own 'program' you should learn far more than just filling in the blanks of someone else's program. Learning about Piaget's stage theory by constructing your own program is a little like learning about airplanes by building them instead of reading about them! Constructing your own "Piagetian Stage Theory Program" is a Piagetian task of its own. It is the actual application of Piaget's theory,which will be covered in Chapter VII.

The author has constructed a "sample" program for you to examine and pattern your program after, but not to copy. Most programs of this type place the "correct" answer(which fills the blank) on the 'left' margin of the paper and the short paragraph or question with the missing phrase or word on the 'right' margin of the paper. If you select to use this exercise you may want to pattern your program after this pattern or creatively design your own. If you decide to design your own pattern of how the program will appear on the paper, be sure you still design it in such as way there is a 'blank' left for a phrase or missing words which appears elsewhere on the page, as the correct answers.

If you decide not to construct your own program you may want to use the sample program provided by the author, as a method to evaluate HOW WELL YOU REMEMBER THE CONTENTS OF THE BOOK, BUT NOT YOUR UNDERSTANDING OF IT!

If you decide to use the sample program, be sure to follow these general rules for using any program of this kind:

1. Cover the provided answer which appears on the left margin with a piece of paper.
2. Write in a possible answer in the blank provided on the right margin. DO NOT JUST THINK A POSSIBLE ANSWER! WRITE ONE IN THE BLANK!
3. After you have written in a possible answer, remove the piece of paper covering the answer on the left margin and look to see if your answer matches the one provided. If your answer is incorrect, does not match the answer provided, line it out and insert the correct answer.
4. If you get the correct answer the first time, go to the next unit (paragraph on the right margin) and give yourself a compliment! Compliments are good for us. Even if it is self-induced.

THE SAMPLE PROGRAM

Jean Piaget	(1)	_____is a Swiss researcher who has created a theory to explain how humans develop mentally.

Cognitive Mental Development	(2)	_____psychologists, a title some people have given Piaget, deal mainly with_____.
Genetic Epistemologist	(3)	Piaget is probably better known as a_____, which combines philosophy, genetics, and psychology as a method to study how knowledge effects the way in which we develop mentally.
Simon & Binet Identifying Retarded Children	(4)	Originally_____ studied human development with the purpose of_____ not to create what we commonly call today the IQ test.

Here are some possible names for the types of conservation tasks shown through the sketches in the ALTERNATE TASK EXERCISE: Sketch #1, the CONSERVATION of LIQUID QUANTITY, Sketch #2, CONSERVATION of LENGTH or DISTANCE, Sketch #3, CONSERVATION of MASS, and Sketch #4, CONSERVATION of QUANTITY of a solid.

Simon & Binet (5) Later Piaget joined_____ in their research and established that the_____of intelligence is more important than the_____of intelligence.

Quality

Quantity

Quantity (6) The_____of intelligence is how many correct answers you get on an intelligence test, whereas the_____ of intelligence is the way you go about solving a problem on an intelligence test.

Quality

(7) Piaget defines intelligence or the quality of intelligence by referring to the terms_____,_____, and_____, which are also used very much in the same way in Biology.

Adaptation, Assimilation, Accommodation

Adaptation (8) _____is basically the way the growing person mentally_____to his environment.

Adapts

(9) The person mentally adapts by_____experiences he has, or in biological talk, the "mind eats the experiences and uses them as building blocks for future experiences", and_____these assimilated experiences by changing a persons values, attitudes, and thoughts to fit the new experiences gained from the environment.

Assimilating

Accommodates

(10) Piaget created his theory of mental development from his discovery that_____ of the same_____make essentially the same type of _____when mentally tested.

Most Children

Age

Reasoning Errors

(11) Piaget labelled his theory the_____.

Cognitive Stage Theory

(12) Piaget's_____is composed of_____of mental development.

Cognitive Stage Theory Four Stages

(13) Piaget's theory of cognitive development is referred to as a stage theory because each_____builds upon the other, or_____ cannot be reached by a person until stage three is reached.

Stage
Stage Four

All People (14) Piaget believes_____ mentally develop in_____ and therefore_____age is only used by him as a reference point for discussion of his stages.

Stages
Chronological

The fourth and last evaluation exercise is THE SELF-GROWTH EXERCISE. This exercise should help you understand Piaget's stage theory from the "inside-out". By searching your mind for past childhood experiences, you should discover "your stages of development" and experience the reality of Piaget's theory.

The author's student's found this exercise particularly helpful because it helped them identify stages in their life they were unaware of before, and taught them to appreciate Piaget's meaning of 'stages'. Since the SELF-GROWTH EXERCISE pertains directly to the development of the person using it as an evaluation method, it should be taken more seriously than the previous three exercises.

When a person uses this exercise, as opposed to the previous three, he is making a personal investment. He is trying to uncover how HE developed, not how SOMEONE ELSE developed!

RULES OF EXERCISE

1. Try to recall all the childhood events you can. For example, "How you acted when you were first pinched or kicked by another kid", "what you thought when you received your first toy . . . ."
2. Try to put these events into each of Piaget's stages of mental development an analyze how they fit based on the criteria set down by Piaget.
3. If you think the events fit, then write reasons why. If you think the events do not fit, continue to recall others until you find one that does. Then, once again, write reasons why. If you cannot think of any childhood events, start with what you think your current stage of mental development is (the formal stage?) and work backwards.
4. If rules #1 through #3 do not generate any events explain why, and consult your baby book!

These four exercises are the only ones the author used. There certainly must be other ways to evaluate your understanding of this book. Probability says so. Try your hand at creating your own exercise. Maybe you can create an evaluation method 'better' or more meaningful than these. Try it. According to Piaget, if you can think of the many possible ways to test your own knowledge, you may be a formal thinker!

CHAPTER VII

THE APPLICATION OF PIAGET'S THEORY
BY
"STAGE"

It is well understood among Piagetian scholars that Piaget's cognitive stage theory has been widely misunderstood and widely misapplied to educative and non-educative situations.

Many of Piaget's followers claim most adults who attempt to apply Piaget's theory do so from the vantage point of a pedant instead of a person who is concerned with the total 'human' (social and emotional development as well as mental) development of the child.

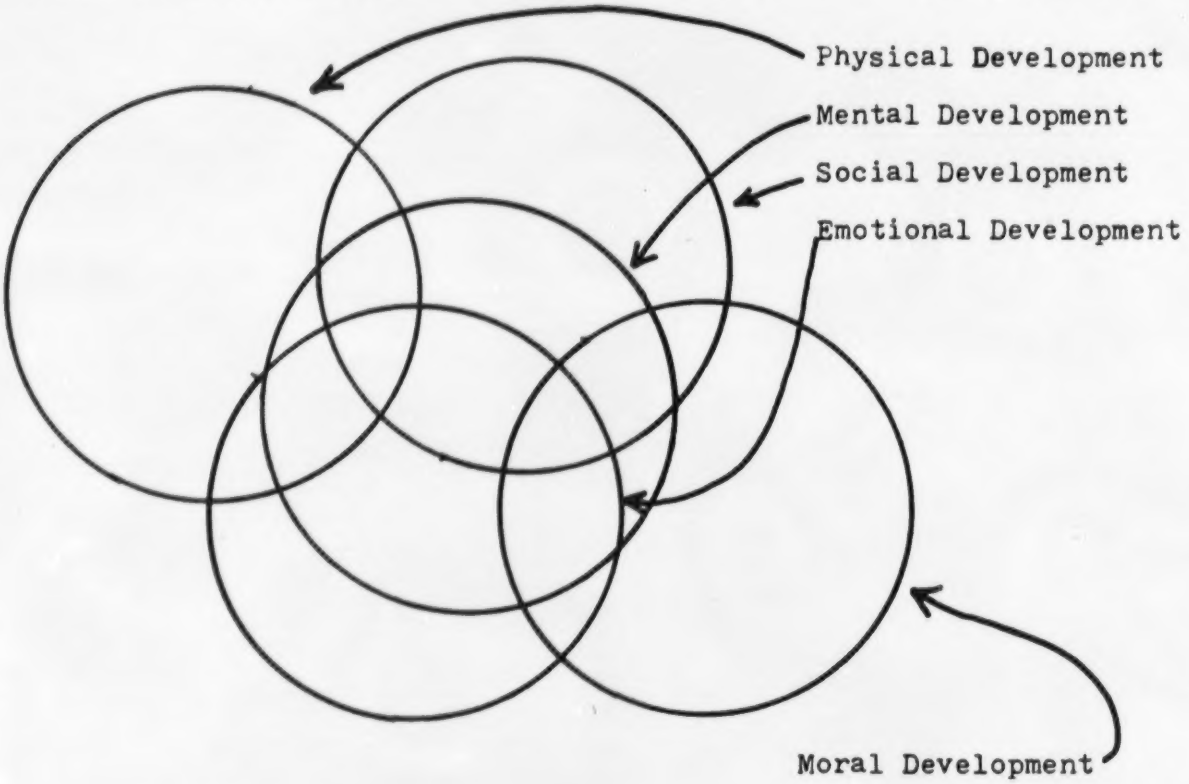
According to Piaget, a "concerned adult" or teacher is a person who attempts to guide a child to and through development by presenting the child with the opportunities to 'discover' relationships that can be found within his (the childs) field of experience, and then help the child build upon these experiences to enhence further development.

It is true Piaget has not written as much about the application of his theoretical framework as he has on its consistency and workings, but he has categorically implied, children can only develop when they are GUIDED by adult experiences and understanding, and not by "adults who SHOW children how to do it", or "lecture to children through demonstration", as the METHOD to "develop a childs mind". On the contrary, Piaget stated that a child's thought patterns and mental activities (thinking) are <u>their</u> (children) methods for solving problems or tasks at hand and are dependent upon <u>their</u> present mental structures or past experience, and should be given priority over the usual superimposed methods most adults use and force upon the child! In dealing with the mental development of children, Piaget has made it quite clear (on the basis of the child's experience) that children are <u>not</u> minature adults, and adults are not children; therefore it would be erroneous for adults to treat children from an adult framework of experience, or as adults.

Piaget has, however, also clearly stated that chronological age or years of experience is not the determining factor in defining a person's level of mental development. During his many years of research he has clearly demonstrated that a child can have the same "task ability" as an 'adult', independent of an adults life experience. That is, children of eleven and below may beable to think in <u>formal terms</u> with much less experience than that of a fifty year old who cannot think in formal terms regardless of the amount of accummulated life experience. Piaget's theory cannot be applied unless this is clearly understood and accepted by the adult who interacts with children.

Many of the difficulties others have had with the application of Piaget's theory may be eliminated for you if you can assume the role of the empathetic person who sincerely cares for the overall development of the child, and not just his mental development. You can apply Piaget's theory adequately to help children develop as total person's if you can take into account the differences and similarities between children's perceptions and adults perceptions of the world.

Although Piaget is primarily concerned with the mental development of the child, he does not naively overlook the relative importance of the child's social, emotional, physical, and moral development. The relationship of these areas of development are probably viewed by Piaget through a diagram much like the one presented below:



The overlapped section of each "developmental circle" represents the amount of relationship between each developmental area. If the overlap is wide the relationship between the respective developmental circles is STRONG, or STRONGLY INFLUENTIAL. If the overlap is narrow the relationship between the respective developmental circles is WEAK, or WEAKLY INFLUENTIAL. For example, Piaget believes a child (and adult) cannot develop HIGH MORALS without HIGH mental development, but a child CAN have HIGH mental development without HIGH moral development. Examine the diagram and determine for yourself the other 'possible' strong and weak relationships among the other developmental circled areas.

If you are interested in studying the way(s) Piaget theorizes about the stages of development other than his stage theory of mental development, consult some of the sources listed in Chapter VIII. If you have an interest in furthering your understanding of his stage theory of mental development, you may also want to consult the selected source list in this same Chapter, Chapter VIII.

There are three general rules you should familiarize yourself with before attempting to apply Piaget's stage theory to actual child-adult interactions. These three general rules permeate his entire theory of mental development and are useful in understanding the mental development of a child at each of the four major stages including the substages. It is this author's hope you keep these rules solidly in mind, so the child (or children) you interact with will learn and understand more.

The first general rule you should keep in mind when attempting to apply Piaget's theory is: DO NOT TELL A CHILD (CHILDREN) HOW TO DO SOMETHING, HELP HIM TO DO IT HIMSELF.

According to Piaget, who subscribes to "Discovery Learning", a child cannot learn nor understand a concept unless he is given the opportunity to discover the concept for himself. A child who is told or shown the differences between 'dogs' and 'cats' and not permited to 'experience' the differences himself will not 'understand' the differences. Piaget claims children 'learn' to understand their environment through DIRECT experience, and not through adult lecture and demonstration. Therefore, if the child (children) you interact with are to learn and understand their environment, you must give them the opportunity and adult guidence to discover their enviornment on their own, using their own unexperienced minds. Regardless of the number of errors you predicate they will make, you must not attempt to regulate and control their thinking. The adult or concerned parent who expects his daughter to understand 'kite making' by making (showing) the kite for her is not permiting his daughter to think for herself, and thus drastically decreasing his daughter's chances of learning to make kites and understand how they fly.

Learning and understanding through "DISCOVERY" is central to Piaget's stage theory of mental development, and must be understood before you can adequately apply his theory.

The second general rule is part of the first rule: CHILDREN MUST BE PERMITTED TO "EXPERIENCE" WHATEVER THEY ARE 'EXPECTED' TO LEARN. Expected only refers to adult guidence toward a beneficial goal for the child and does not mean force the kid to think like an adult. Forcing a young child or even an adolencent, most times, to think like an adult is from the beginning doomed to failure.

According to Piaget, children think DIFFERENTLY than adults. Their conceptual framework or the way they perceive their environment, is dependent to a greater degree upon their immediate experiences, an less upon reason. Even a young child's usage of language reflects his ability to understand his environment. Children usually between the ages of two and seven have difficulty using pronouns other than "I", and some Piagetian theorist have accummulated evidence that suggests young children between the ages of two and five hardly ever use the pronouns "he" and "she" and when they do many do not understand their usage. Clearly this evidence demonstrates a definitive difference between the 'thinking' of adults and children.

The word "EXPERIENCE" in this rule means a child must mentally engage whatever it is he is expected to learn. The child who is permitted to touch, grasp, and physically manipulate a toy truck is 'assimilating' and 'accommodating' and therefore is "EXPERIENCING" the truck and its relationship to the environment. (The child is then 'experiencing' and learning through discovery.)

Piaget has claimed that lecturing to a child with the expectations he will learn whatever it is you are lectuing him about will only result in teaching him the language used in the lecture, and not whatever it was you wanted him to learn. These two rules are substantially similar but different enough to make note of. In support of these two rules is Piaget's claim: CHILDREN MUST BE ALLOWED TO TAKE PART IN THE PLANNING OF THEIR OWN LEARNING ACTIVITIES IF LEARNING IS TO BE MEANINGFUL AND AUTOMATIC, since humans are by nature learning animals.

The third general rule is: A CHILD MUST BEGIN AT "HIS" BEGINNINGS, NOT AT YOUR BEGINNINGS. You must realize that your starting points as an adult are "advanced points" for the child.

If you tried to teach or guide a child's learning by appealing to your starting points as the comparative basis for teaching a child something, you will undoubtly frustrate the child since your beginnings are based on your accummulated experiences which are beyond the experiences of the child. Furthermore, your mental development "may be" more advanced than his, therefore your beginning "may be" a stage or two above his.

Study these three general rules carefully. You will need a clear understanding of them in order to apply Piaget's stage theory to actual adult-child life experiences. These rules should help you to better understand "your expectations" of a child's mental development and behavior during HIS developmental stage as described by Piaget's stage theory, and help you HELP the "undeveloped" child to joyfully learn as much as possible about his environment so he too can develop into a well adjusted adult.

WHAT YOU CAN (Should) EXPECT FROM THE SENSORIMOTOR CHILD

1. You can expect the Sensorimotor Child to "ignore" your wants, desires, and reason, most of the time. A young baby, for example, will continue to cry dispite your efforts "to calm him by using REASON". Young children up to the age of about 8 or 9 have difficulty understanding most adult reason. During the Sensorimotor stage of development you cannot expect a child to conform or understand your reason!

   The child 5 months of age does not cry because he wants to irratate you or to disturb your work in the study. He only cries because he is uncomfortable, not because he wants your attention or is intentionally harrassing you.

This is the 5 month old child's BEGINNINGS, and must be treated according to these beginnings, and not yours. You understand reason. He does not.

2. You can expect the Sensorimotor Child to "ignore" your adult efforts to correct his clumsy behavior. The 12 month old child who persistently drops his spoon in attempts to use it properly is not doing so to intentionally bother you. At this age the child's motor skills are under developed so he hasn't the physical ability to grasp the spoon nor coordinate his arm and wrist with his eye to use the spoon as the older child does.
   Even though it is hard for some of us to understand the clumsiness of the Sensorimotor Child we must accept it as part of the physical development of the child. There is no doubt about the relationship between the physical development of a child and his mental development. If an adult or older brother or sister tease or ridicule a younger member of a family who is physically clumsy, he may withdraw emotionally and socially and make it difficult for him to develop mentally.
3. You can expect the Sensorimotor Child to "ignore" your adult efforts to 'toilet train' him before approximately the 24th month of life. A child less than 24 months old 'usually'(in almost all cases) does not have voluntary control over the 'sphincter' muscles which control defecation, and therefore CANNOT through REASON or other be 'toilet trained'.
4. You can expect the Sensorimotor Child to "ignore" your adult efforts to teach him 'responsibility'. Sensorimotor Children do not yet have the capacity to understand 'responsibility' so

you as the adult should not expect him to take care of a small animal you think will "teach" him responsibility. The Sensorimotor Child is not yet capable of taking care of himself, so it is futile to expect him to understand how to take care of a small animal or some other entrusted item.

There are undoubtly many, many, examples that could be used to illustrate "what you should or should not expect from the sensorimotor child" in terms of his mental development. Search your mind for others!

WHAT YOU CAN (Should) EXPECT FROM THE PREOPERATIONAL CHILD

1. You can expect the Preoperational Child to be overly 'self-centered' in the adult sense. A three or four year old child never really means he hates you when he says it like some adults. According to Piaget, the literally 'self-centered' child is innately 'egocentric' and CANNOT understand another person's point-of-view under any conditions. Remember, EGOCENTRISM is 'normal' for all developing humans from early infancy to perhaps adolescence and should be dealt with through understanding not persecution. Children during this age will be rude and 'difficult' many times, but should be understood. Remember again: It is their BEGINNINGS that you should concern yourself with in helping them to develop.

   Pinching a child with the expectations he will stop pinching others is an inappropriate method of stopping his 'pinching behavior'. Young children of this age and perhaps sometimes older do not learn lessons through punishment. If you attempt to stop

a child from pinching by returning him with a pinch each time you see him pinch another or yourself, you quite probably will reinforce his pinching behavior since you as his perceived model are in effect telling him: "pinching is okay because I as an authority figure license pinching." In other words, you as his model show him through your behavior (pinching) that pinching is okay. (Review the section of the book on modeling before continuing, so it is clear in your mind.) As an adult, pinching a child as a means to stop the child from pinching others, quite likely, will fail because of the phenomenon of MODELING. You may pinch the child hard enough (This is not advised!) so he will stop pinching YOU, but you have given him license to pinch others--even just as hard! Think about the 'method' of TEACHING LESSONS TO OTHERS before you act hastily and make matters worse. You should have discovered that this method hardly ever works with adults! How can you expect it to work with children?

2. You can expect the preoperational child to make many language errors and over generalize much of the language he learns from about age two through this stage and sometimes into the next stage of development depending upon the rate of his mental development (which is independent of your efforts to teach him otherwise. Furthermore, children do, as you know, pick-up bits and pieces of language as they develop, and they also interpret these bits and pieces of language in their own way and not necessarily your way! This should be kept in mind when trying to teach a child how to talk and how to write. You can make it easier on the child psychologically if you help him develop from where he is, not from where you are.

Also, you may have already noticed that many children seem to resist your efforts to correct their poor language usuage. They do not resist you because they are simply stubborn. They 'resist' your efforts because they do not yet have the ability to use language as you can. Do not persecute a child for not speaking the way you do. Help him develop his natural ability to use language by understanding his stage of mental development, and help him actively engage in proper conversation, but **DO NOT PERSECUTE** him if it appears he is resisting your help. In time he will learn as properly as you did.

3. You can expect the Preoperational Child to make many errors in reasoning. From the age of about 18 months to the Concrete Operational stage of development most children have great difficulty with 'adult reason'. It is difficult for them to understand why adult's reach some of the conclusions they do. During this stage of development most children are just scratching the surface of their reasoning potential. Children of this age will many times call every dog they see by their dog's name, and 'think' all dogs are exactly the same as their dog, and regardless of your efforts to change their 'mind' they will still 'think' all dogs are the same as their dog. Once again, help the child deal with his ability and do not superimpose your abilities upon him. This will only frustrate him. Errors in CONSERVATION is also peculiar to children in this stage of development. Review the chapter on conservation.

4. You can expect the Preoperational Child to possess an acute sense of 'perception'. A child during this stage of mental development may 'see' things you do (can) not. Some researchers have discovered that many young children can 'see' the slight of hand tricks of the magician whereas adults cannot. When we develop into 'reasoning adults' we tend to lose some of this 'acuteness' that these children appear to possess. Pay attention to children who say they see things you cannot! You may learn alot about yourself, and certainly the child.

   It has also been discovered by Piaget and others that children of this age (as well as oldsters) are <u>tied</u> to their perceptions, whereas you are not. Be understanding with the child who truly thinks grandma is someone else because she has on an unfamiliar hat and dress. Help the child understand his environment, but do not push it on top of him using adult reason which he cannot yet understand. This does not imply you should treat children at this developmental stage as "babies" either. You should simply understand what they can and cannot do.

Usually it is not until the Concrete Operational stage of development that a child can give you directions to where he lives. Children of this stage certainly understand their house exists even though it is not within their immediate vision (Object Permanence), and may know their street and house address from memory, but still cannot give you directions to their house because the environment surrounding their house is not within their direct experience. Knowing this, do not force a child of this stage of development to tell you how to get to his house. He cannot tell you.

WHAT YOU CAN (Should) EXPECT FROM THE CONCRETE OPERATIONAL CHILD

1. You can expect the Concrete Operational Child to think in purely concrete terms. In order for the Concrete Operational Child to understand his environment he must perceive it directly. You will save tension on your part and the child's then if you explain things to the Concrete Operational Child in concrete terms. Do not use abstract language or examples when explaining something to the Concrete Operational Child. Meet the Concrete Operational child at his level, not yours!

2. You can expect the Concrete Operational Child to lie and cheat, have difficulty distinguishing between fact and fantasy, and difficulty with self-control. Children of this age group usually 'think' everybody knows the same things they do. Therefore, they don't see much wrong with lying and cheating. They don't lie or cheat with malicious intent, but with the innocent belief that everybody knows what's right or wrong.

   Some researchers claim children of this age group also have difficulty distinguishing between fact and fantasy, so it may be good advice not to persecute a child because he does not perceive the facts you do.

   Children of the Concrete Operational stage of development also appear to lack emotional, social, and 'mental' control. These children still seem to lack a certain conceptual ability which makes it difficult for them to understand the concept of a "secret" for example, and therefore they can hardly be held responsible for keeping one.

Since children between the ages of about six and twelve are also developing very rapidly emotionally, socially, and physically there is no doubt this rapid development could effect the way these children think about themselves and their environment. Their self-control can very well depend upon their rate of mental development relative to these other areas of development and their perception of their environment and the adult environment.

If you are a Concrete Thinker and the child you are dealing with is also a Concrete Thinker, you may possibly "mentally treat" the child as an equal excluding your greater experiences. You still may not treat this child as an adult yet in other ways though, because he lacks your experience. You may however beable to communicate with this child at your intellectual level since you both are equally development in this area. If you are a Formal Thinker you will have to communicate at the Concrete Thinker's level, and not your own.

WHAT YOU CAN (Should) EXPECT FROM THE FORMAL OPERATIONAL CHILD

1. You can expect the Formal Operational Child to think abstractly. The child has now graduated to "full mental capacity" and can deal effectively with the usual adult concepts. The only quality missing at this age which still separates the twelve year old from the 'adult' is his lack of 'maturity' due to his lack of experience. In dealing with people at any level of mental development this quality should be given careful consideration.

On the next several pages you will be given the opportunity to exercise your ABILITY to apply the three general rules necessary for the application of Piaget's stage theory through the evaluation of sketches.

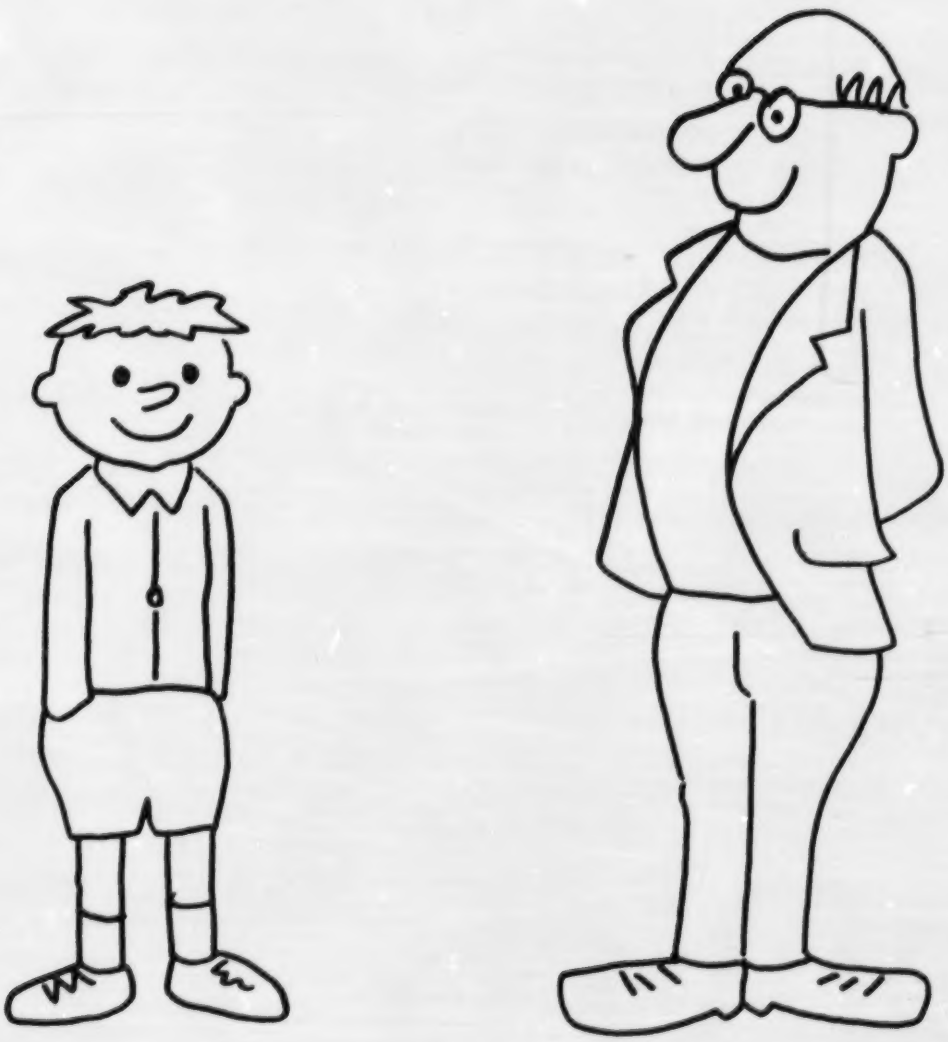
Evaluate (analyze) each of the following sketches in terms of the three general rules for applying Piaget's stage theory of mental development by writing a short essay (about 500 words) explaining the interaction between the adult and the child. Explain how the adult pictured in each sketch can most effectively deal with the child so the greatest degree of mental development can be experienced by the child, and the greatest degree of understanding can be acquired by the adult about how to appropriately help children develop.

SKETCH #1--The Sensorimotor Stage

SKETCH #2--The Preoperational Stage

SKETCH #3--The Concrete Operational Stage

SKETCH #4--The Formal Operational Stage



CHAPTER VIII

SOURCES

This Chapter covers some of the many books and articles written by both Piaget and others who have done research on the cognitive development of children. The Chapter is sectioned into three parts. The first section lists books and articles written by Piaget, the second section lists books and articles written by prominent followers of Piaget's theories, and the third section lists books and articles on the cognitive development of children in general which you may want to consult to further your knowledge and understanding of cognitive development in children, and hence ultimately in all humans.

For your convenience the books and articles listed in section one and two are categorized according to this authors understanding of their respective level of reading difficulty assuming little or no prior study of Piaget's works.

The "level of reading difficulty" scheme used is:

LEVEL 1--Very easy to read and understand. Most laymen with minimal reading ability should beable to comprehend and understand these.

LEVEL 2--These sources are 'moderately difficult'. Anyone with college training in the behavioral sciences or with better than average reading comprehension and intelligence should beable to digest them easily.

LEVEL 3--These sources are 'difficult'. They can probably be only understood by Psychologists with special training in cognitive studies, or very bright college student's with a major background in cognitive psychology.

SECTION #1

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SECTION #3

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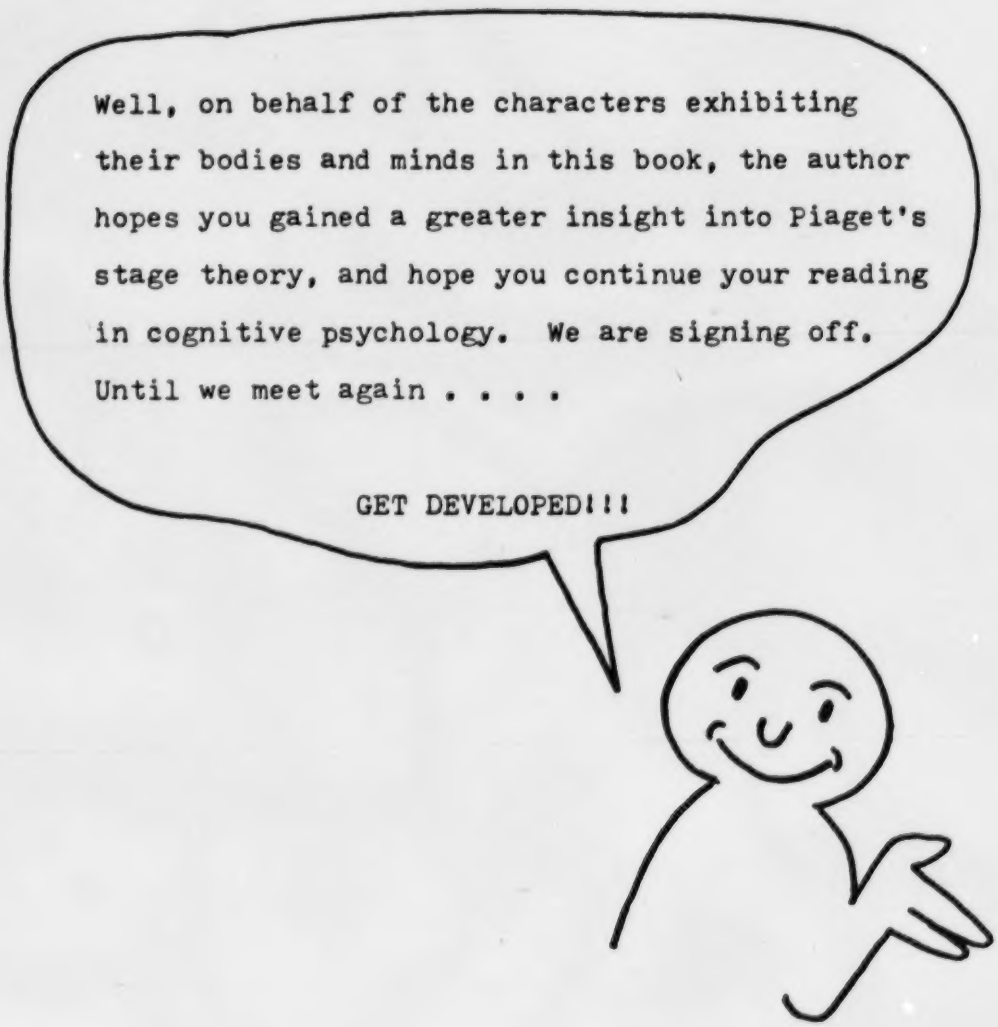
**This is only a partial list of the many, many books, articles, and notes that have been written on Piaget's theory.

FINAL NOTE


Well, on behalf of the characters exhibiting their bodies and minds in this book, the author hopes you gained a greater insight into Piaget's stage theory, and hope you continue your reading in cognitive psychology. We are signing off. Until we meet again . . . .
GET DEVELOPED!!!

Look into your head and see what's there!